

609-EMD-220

## **EOSDIS Maintenance and Development Project**

# **Release 7.22 Operations Tools Manual for the EMD Project**

Revision --

March 2009

Raytheon Information Solutions  
Riverdale, Maryland

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# **Release 7.22**

## **Operations Tools Manual**

### **for the EMD Project**

**Revision --**

March 2009

Prepared Under Contract NAS5-03098  
CDRL Item # 023

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# Preface

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This document is a formal contract deliverable. It requires Government review and approval within 45 business days. Changes to this document will be made by document change notice (DCN) or by complete revision.

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## Revision History

Document Number	Status/Issue	Publication Date	CCR Number
609-EMD-220	Original	March 2009	09-0092

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## **Abstract**

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This document describes the human-machine interface (HMI) characteristics of the tools (computer software configuration items) used by the ECS operations staff.

**Keywords:** Computer Software Configuration Items (CSCIs), GUI, Interface, Operations, Release 7.22, Screens, Software and Tools

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## **Glossary**

## **Abbreviations and Acronyms**

# 1. Introduction

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## 1.1 Identification

The Release 7.22 Operations Tools Manual, Contract Data Requirements List (CDRL) item 23, whose requirements are specified in Data Item Description (DID) EMD-EDP-23, is a required deliverable under contract NAS5-03098.

## 1.2 Purpose

This document describes the human-machine interface (HMI) characteristics of the tools (configuration items) used by the ECS operations staff when performing the following:

- Computer systems administration
- System monitoring
- Configuration management
- Security and accountability
- Science software integration and testing
- Science data ingest
- User services
- Common services

This document provides background information that is the basis for the *Release 7.22 Operations Procedures for the ECS Project* (DID 611). The 609 document is intended to (1) familiarize the ECS operators with their tools, (2) be used as a reference for all ECS operational tasks, and (3) be used as an aid during training of ECS operations staff.

## 1.3 Scope

This document applies to *Release 7.22*, and not to any subsequent releases of the ECS. This document is limited to (1) a detailed description of customized operator tools, (2) a brief description of Commercial Off-the-Shelf (COTS) software used by operations and references to the applicable vendor manuals, and (3) a detailed description of customized COTS software. This document points to DID 611 for all operational procedures or to individual COTS manuals for detailed COTS instructions. This document is intended for use by operators, maintainers, and external users of the ECS system during the period in which *Release 7.22* is operational.

## **1.4 Status and Schedule**

This submittal of this document meets the milestone specified in the CDRL of NASA contract NAS5-03098.

## **1.5 Organization**

This document is organized to describe the tools used by ECS operations staff and external users during operation of *Release 7.22*.

Section 1.0 provides information regarding the identification, scope, purpose, status, and organization of this document.

Section 2.0 provides a listing of related documents, which were used as source information for this document. The section also identifies the documentation provided for each *Release 7.22* software component.

Section 3.0 provides a brief overview of the *Release 7.22 ECS*.

Section 4.0 provides a detailed description of *Release 7.22* operations tools. It is organized by operation function and provides the following types of information: tools overview, required operating environment, CSCI function, operator commands, system messages, reports, and outputs.

The Glossary section contains terms used in this document.

The Abbreviations and Acronyms section contains an alphabetical list of the abbreviations and acronyms used in *Release 7.22*.

## 2. Related Documentation

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### 2.1 Parent Documents

The parent document is the document from which the scope and content of this Release 7.22 Operations Tools Manual has been derived.

423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)
423-41-03	EOSDIS Core System Contract Data Requirements Document

### 2.2 Applicable Documents

The following documents, referenced within this Release 7.22 Operations Tools Manual, are directly applicable or contain policies or other directive matters binding upon the content of this volume.

110-EMD-001	Configuration Management Plan for the EMD Project
305-EMD-220	Release 7.22 Segment/Design Specifications for the EMD Project
311-EMD-220	Release 7.22 INGEST (INS) Design and Database Schema Specifications
311-EMD-224	Release 7.22 Order Manager Database Design and Database Scheme Specifications
311-EMD-225	Release 7.22 Spatial Subscription Server (SSS) Database Design and Database Schema Specifications
311-EMD-226	Release 7.22 Data Pool Database Design and Database Schema Specifications
311-EMD-227	Release 7.22 Archive Inventory Management (AIM) Database Design and Database Schema Specifications
611-EMD-220	Release 7.22 Mission Operation Procedures for the ECS Project
625-EMD-221	Release 7.22 Training Material for the EMD Project Volume 1: Course Outline
625-EMD-222	Release 7.22 Training Material for the EMD Project Volume 2: Problem Management
625-EMD-223	Release 7.22 Training Material for the EMD Project Volume 3: Data Pool Ingest

625-EMD-224	Release 7.22 Training Material for the EMD Project Volume 4: Data Distribution
625-EMD-225	Release 7.22 Training Material for the EMD Project Volume 5: Archive Processing
920-TDx-017	Linux Platform UNIX Kernel Configuration Parameters

## 2.3 Information Documents

The following documents are referenced herein, and amplify or clarify the information presented in this document. These documents are not binding on the content of the Release 7.22 Operations Tools Manual.

*C Language Reference Manual* (1999), Silicon Graphics, Inc., Mountain View, CA

*ClearCase Administrator's Manual, Unix Edition Release 2003.06* (2003), IBM Corporation, 1133 Westchester Avenue, White Plains, New York 10604

*Data Production Software and Science Computing Facility (SCF) Standards and Guidelines, Rev A, October 1996, 423-16-01, GSFC, Greenbelt, MD*

*Expert Analyzer Output File Format* (2000), Network Associates Technology, Inc., Santa Clara, CA

*FDDI Overview and Guide to Troubleshooting* (1998), Network Associates, Inc., Menlo Park, CA

*IDL Reference Guide, Interactive Data Language* (2001), Version 5.5, Research Systems, Inc., Boulder, CO

*IDL User's Guide, Interactive Data Language* (2001), Version 5.5, Research Systems, Inc., Boulder, CO

*Introduction to Mozilla* (2003), The Mozilla Organization, Mountain View, CA

*Microsoft Excel User's Guide* (2000), Microsoft Corporation

*Microsoft Word User's Guide* (2000), Microsoft Corporation

*MIPSpro Fortran 77 Language Reference Manual* (1999), Silicon Graphics, Inc., Mountain View, CA

*NetWorker Administrator's Guide 7.0* (2003), Legato Systems, Inc., 3210 Porter Dr., Palo Alto CA 94304

*NetWorker User's Guide 7.1.2* (2004), Legato Systems, Inc., 3210 Porter Dr., Palo Alto CA 94304

## NASA/ESDIS Standards

Sybase product documentation may be found at the following site:

[http://infocenter.sybase.com/help/index.jsp?topic=/com.sybase.dc36273\\_1251/html/sprocs/title.htm&toc=/com.sybase.help.ase\\_12.5.1/toc.xml](http://infocenter.sybase.com/help/index.jsp?topic=/com.sybase.dc36273_1251/html/sprocs/title.htm&toc=/com.sybase.help.ase_12.5.1/toc.xml)

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## **3. Release 7.22 Overview**

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### **3.1 Release 7.22 Objectives**

Release 7.22 is a maintenance release of the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS). Release 7.22 may be placed in operations only after additional disk capacity to complement existing Data Pool and LTO Libraries delivered to DAACs have been installed.

Objectives of the release include: 1) migrate data on legacy 9940 media to new LTO media, as well as for inserting data ingested prior to 7.22 install, into the Online Archive 2) extend end-to-end checksumming capability; 3) improve BMGT error handling capability; 4) provide tools to detect and repair data integrity issues; 5) improve webaccess performance; and 6) delivery of Category 2 NCR fixes.

#### **3.1.1 Release 7.22 Capabilities**

ECS capabilities are developed in terms of formal releases. Release 7.22, which is controlled by Configuration Management, provides capabilities to support the ingest and archive of raw data obtained from EOS mission spacecraft, including Terra (AM-1), Aqua (PM-1), Aura, ACRIMSAT, and ICESAT. Other capabilities provided by Release 7.22 include processing the data obtained, distributing raw or processed data as requested, quality assurance of processed data, supporting communication networks, and systems monitoring via interfaces with the ECS operations staff.

The main thrust of Release 7.22 was to support DAACs in realizing their On-line Archive implementation, migrate data from 9940 tapes to new LTO tapes and provide tools to detect and repair data integrity issues. Plus, the release provides operations the necessary tools to monitor migration, notify migration errors, retry migration in case of errors, perform inventory validation, restore data from tape archive to on-line archive, restore data from on-line archive to tape archive, publish and unpublish data to datapool.

Several enhancements were made to the end-to-end checksumming capability as part of Release 7.22 to further improve the integrity of ECS data holdings. Enhancements include:

- 1) end-to-end checksumming capability for browse and ancillary granule files (PH, QA, DAP);
- 2) checksum verification on all data distribution modes ftp-push, scp, or hard media (DVD, CD and DLT).
- 3) capability to proactively check the integrity of ECS data holdings.

Also, enhancements were made to the BMGT to react to error messages returned from ECHO, and query the current state of the ECS inventory to automatically fix, or ignore errors when it

can, and only alert the operator when necessary. The intent is to reduce the number of errors which DAAC staff must attend to.

Unique capabilities and modifications associated with this release include:

- AIM Data Migration Utilities - in parallel to the 7.22 operational system, the utilities will migrate data on legacy 9940 media to new LTO media, as well as for inserting data ingested prior to 7.22 install, into the Online Archive. The utilities include Migration Stat Viewer Tool that provides Operations with a command-line interface to view statistical information about migration like granule state count, file state count, media state count, error state count, amount of data processed in a given time interval, and the data rate in a given time interval.
- To support the operation of the On-Line Archive, the following existing components have been modified:
  - Data Pool Action Driver (DPAD) - to prevent granules from being removed from the Data Pool the DPAD was modified not to submit cleanup actions to the DPL Ingest component. Enhanced to perform registrations only, perform an additional check to make sure that the media on which the file resides is physically located in the archive, to check to make sure that the granule is not logically deleted, or DFA'd. This is necessary and ignore retention priorities and periods.
  - NDPIU Enhancements – failure to publish because of a lack of band information will not cause the granule to be removed from the Data Pool; and Granule replacement will unpublish, rather than undelete the replaced granule.
  - Batch Insert Utility Enhancements - A ‘-collection’ option was added to the Batch Insert tool, to allow specification of all granules belonging to that collection; A ‘-actionsource’ option was added to the Batch Insert tool, to allow specification of publication or registration only for specified granules.
  - Order Manager (OMS) Enhancements – 1) modified so that it does not submit hidden granule cleanup requests to DPL Ingest; 2) The Online-Archive capability allowed for significant simplification of OMS processing due to the fact that once granules are staged from the Archive to the DataPool they will remain in the DataPool. This rendered the water mark configuration parameters obsolete. The purpose of the watermark configuration was to limit the amount of data staged in the .orderdata hidden directory. With the 7.22 Online-Archive the data staged in the DataPool hidden directory will stay there until it is removed from the Archive. 3) In addition, the bottleneck incurred by staging files from tape will be reduced over time due to the migration of data from the archive into the DataPool. Files will no longer need to be read from tape, as they will already be in the DataPool. With this in mind the 7.22 release of OMS was modified to use only two configuration parameter to throttle the staging of granules. All configuration parameters based on cost categories (NoCost, Cheap, Moderate, Expensive) have been removed. The parameter "Max Number of Granules Staging" was added

to limit the number of staging requests OMS sends to DPAD. The second parameter "Max Concurrent Requests Processed" that is needed already exists in previous release.

- Data Pool Cleanup Enhancements - updated so that it does not delete granules from the Data Pool when logical deletions occur in the AIM database. It will instead delete them only when a physical deletion or DFA occurs.
  - Data Pool Ingest Enhancements - changed so that it does not create a cleanup action for hidden granule inserts.
- The release includes the following new components to support the operation of the On-Line Archive:
  - DPL Unpublish Utility - the unpublish utility is a new tool that is designed to move granules from the public data pool into the hidden data pool. It will 1) unpublish the specified science granules. 2) remove associated browse granule if permitted and 3) can be used to unpublish granules which are marked for deletion in the AIM database (deleteEffectiveDate is set, or DFA flag is set to “Y” or “H”).
  - DPL Publish Utility - it publishes granules that already exist in the Data Pool, but it can also be used to insert granules into the Data Pool from AIM. Note that the Publish Utility does not perform the insert and/or publication actions directly, instead, it submits requests to the Data Pool Action Driver to perform the work on its behalf.
  - RestoreOlaFromTape utility – it will repair individual granules or files that are lost or damaged in the on-line archive provided that the inventory entries of the corresponding granules are completely intact.
  - The RestoreTapeFromOla utility – it will repair individual files that are lost or corrupted on tape based on the primary file instance that is present in the on-line archive. The files being restored must be inventoried both in the AIM and DPL databases because the utility does not create new AIM or DPL database entries.
- The following utilities replace existing Datapool Cleanup Utility (EcDlCleanupDataPool.pl)
  - DataPool Cleanup Granules Utility (EcDlCleanupGranules.pl) provides a mechanism by which the ECS Operations Staff can remove granules from the DataPool. It will remove the files and database entries associated with the specified granules from the DataPool. The utility has the ability to find all granules that were removed from the archive and delete them from the DataPool. The utility can be used to remove expired non-ECS granules from the DataPool. All deletions of ECS granules will be exported to ECHO, and the utility has the ability to export deletions to ECHO before the DAAC removes the granules. If the utility is not able to remove the granule because it is on order or the file

system for the granule is unavailable or there is a lock on the granule, deletion will be postponed until the next run.

- DPL cleanup orphan/phantom validation utility (EcDLCleanupFilesOnDisk.pl) provides a mechanism for the ECS Operator to perform validation of the Data Pool disk holdings. It can also be used to remove files from the DataPool directory structure that do not have an associated entry in the Data Pool Database (orphans). In addition it will create output files specifying any granules in the Data Pool Database whose files are missing from the Data Pool disk (phantoms).
- Link Checker Utility (EcDLLinkCheck.ksh) – tool used for finding or deleting ‘broken’ symbolic links, i.e., links that point to files that do not exist. The Data Pool contains three varieties of links. The public ESDT directories contain links that point to browse files associated with science granules. The hidden ESDT directories contain links for ordered granules that point to public science files. The FTP pull directory that is used by OMS contains links to files/links in the hidden ESDT directories.
- The following existing components have been modified to support extended checksumming capability:
  - Data Pool Ingest Enhancements - added browse and ancillary files checksumming capability. Checksum values are stored in the DataPool database during DPIU registration and in AIM database during IIU insertion.
  - Order Manager (OMS) Enhancements – modified the behavior to ensure the checksum of the file in the DataPool has been verified with a configured number of days. This behavior is applied to all data distribution modes including ftp-pull (existing), ftp-push, scp, or hard media (DVD, CD and DLT).
  - DataPool Action Driver (DPAD) Enhancements – modified the behavior to update the 'last verified' time when it verified a checksum.
- The following two new components have been added to support extended checksumming capability:
  - DataPool Checksum Verification Utility (DPCV) – it provides a mechanism by which the Operations can perform checksum verification for files in the Data Pool. It can be scheduled and run as a background process to proactively verify the integrity of files in the Data Pool. The utility could also be run on-demand by the DAAC operator to verify checksum values for a particular set of files.
  - Archive Checksum Validation Utility (ACVU) – it provides a mechanism by which the Operations can perform checksum verification of files in the AIM archive. The utility allows the operator to specify which files to verify, by sampling files based on media ID (a single media ID or a list of media IDs), volume group (a single volume group or a list of volume groups), or granule ID (a single granule ID, a list of granule IDs, or an input file containing granule IDs).

The operator may also restrict verification to files which have not had their checksum verified within an operator-specified time period.

- BMGT Enhancements (phase II) – to reduce operator burden, the subsystem was modified to handle Ingest Summary reports more intelligently. Modifications primarily effected Monitor and Manual processes. Monitor process was changed to take actions in response to errors received from ECHO per configured set of policies. Where necessary Monitor queues a granule for ReExport to remedy an error without operator intervention. Monitor will also determine if an error is spurious and can safely be ignored. Manual export process was enhanced to provide the ability to initiate a corrective export containing any granules which are in the reExport Queue. New Error Tuning and ReExport Queue Listing pages were other minor changes to the BMGT GUI. The Package Details of the BMGT GUI was enhanced to include a link to a formatted view of the Ingest Summary Report (if one exists).
- XML Check Utility – the utility provides a mechanism by which the Operations can periodically check for corruption in the XML Archive.

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## **4. Description of the ECS Operational Tools**

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The HMI characteristics description of the software tools that the ECS operator uses to perform routine ECS operations is listed by the following major functional areas:

- 4.1 Computer Systems Administration
- 4.2 System Monitoring
- 4.3 Configuration Management
- 4.4 Security and Accountability
- 4.5 Science Software Integration and Test (SSI&T)
- 4.6 ECS Data Ingest
- 4.7 Science Data Archive and Distribution
- 4.8 User Services Tools
- 4.9 Common Services Tools

When using this document, the reader should note the following:

- The screens/GUIs presented in this section are samples and often do not reflect the actual window contents seen by the DAAC operator because they depend on hardware configuration, actual server names, directories, etc.
- Basic UNIX, Network and application configuration and utilities are not explicitly addressed in this document
- Launching tools from the command line is avoided as much as possible to give operations management the ability to control (a) access to the UNIX command line and shell; and (b) reduce the use of the xterm except for programs other than Motif programs
- This document references the EMD Baseline Information System (EBIS) web page and URL <http://pete.hitc.com/baseline/index.html>, in several places for information on the Required Operating Environment. This web page was constructed for the desired information in the EMD Baseline. Until it is put in place, the reader is referred to the DAAC library for hard copies of the desired COTS documents.

**Note:**

The sample GUI screen images provided in the tool description in this document are best viewed on a computer terminal. The terminal provides the color and resolution needed to convey the screen design and usage. The terminal allows the user to view and enlarge the screen image to see the various fields on the screen images if they are unreadable. A hard copy printout of a screen image can lose all of its color and a great deal of its resolution in going from a computer terminal to a printer to a Xerox machine. The transition from terminal to printer to Xerox machine can cause the quality to degenerate to the point the images are totally unreadable.

## **4.1 Computer Systems Administration**

This section describes the computer system administration tools used by DAAC operators:

1. EMC NetWorker
2. StorNext Storage Manager
3. Interactive Structured Query Language (ISQL)
4. Sybase Replication Server
5. ECS Assistant
6. ECS Registry GUI
7. Whazzup GUI

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#### **4.1.1 EMC NetWorker**

EMC's NetWorker is a set of three components: Administration, Backup, and Recovery - used by system administrators to back up the entire system, with the exception of DBMS files (see Section 4.1.3, "ISQL," for details on backup of DBMS files). The basic configuration is to have a NetWorker Server with a backup device (i.e., Jukeboxes or 8mm tapes) networked to a number of clients that represent the subsystem hosts. EMC NetWorker version 7.4.2, installed in ECS with Redhat 3 Update 6, is "Y2K" compliant.

NetWorker performs site-wide system backup. It provides a suite of integrated tools for backup and recovery, archive and retrieval, and hierarchical storage management. The product supports multi-platform networks, contains a motif-based GUI with on-line help, and supports concurrent device support for parallel backup and recovery using up to 16 storage devices. Authorized users can perform both scheduled and ad-hoc backups, recoveries and other data management services. NetWorker software consists of two components: a client portion, which runs on the systems to be backed up, and a server portion, which is the system to which the backup devices are connected. The client portion sends the data to be backed up to the server portion, which then writes the data out to disk.

EMC NetWorker is used to perform the operator functions listed in Table 4.1.1-1.

**Table 4.1.1-1. Common ECS Operator Functions Performed with  
EMC NetWorker**

Operating Function	GUI	Description	When and Why to Use
Manage, configure, and monitor NetWorker	<ul style="list-style-type: none"><li>• NetWorker Administrator GUI</li></ul>	Allows monitoring of server status, devices, sessions, messages, and pending displays	To start NetWorker (NW) tasks and monitor server activity
Monitor and schedule backup	<ul style="list-style-type: none"><li>• NW Backup GUI</li></ul>	<ul style="list-style-type: none"><li>• Group backup</li><li>• Scheduled backup</li><li>• Incremental backup</li></ul>	To back up client files
Recovering backed up files	<ul style="list-style-type: none"><li>• NW Recover GUI</li></ul>	Retrieves files that have been backed up	To recover backed up client files

##### **4.1.1.1 Quick Start Using NetWorker**

This section presents an orientation of NetWorker. For more information, see the *NetWorker User's Guide*, and the *NetWorker Administrator's Guide*, Using NetWorker Windows and Menus.

#### **4.1.1.1 Invoking NetWorker from Browser Window**

The NetWorker Administrator tool is used to manage and configure the NetWorker environment. To execute NetWorker Administrator from the browser window prompt you must be logged onto either the Navisphere workstation or the EMC Networker server machine. Launch a browser window and enter the IP address of the backup server followed by :9000 in the URL address field. Login as administrator and launch the Networker application.

(ie. `http://xxx.xxx.xxx.xx:<port #>`)

The NetWorker Recover tool is used to recover files on client machines. To execute NetWorker Recover from the command line prompt use:

**`nwrecover <-s server_name> &`**

**Note:** The optional `<-s server_name>` is used only in NetWorker environments that have multiple NetWorker servers.

**Note:** With NetWorker release 7.4, a number of client graphical interfaces on UNIX have been discontinued. The following interfaces are no longer supported:

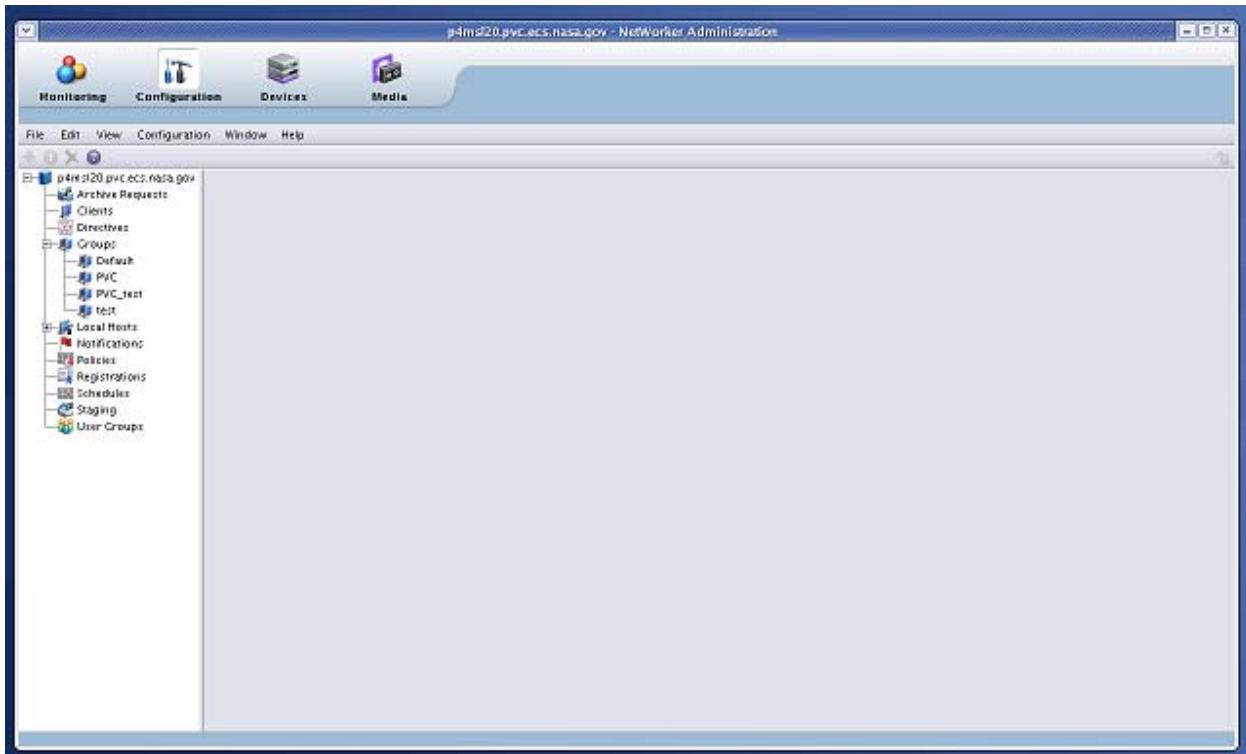
**`nwbackup`** - To perform ad hoc backups, use the **save** command.

**`nwarchive`** - To perform manual archive operations, use the **nsarchive** command.

**`nwretrieve`** - The functionality in the `nwretrieve` interface has been added to the **`nwrecover`** interface.

#### **4.1.1.2 NetWorker Main Screen**

Figure 4.1.1-1 shows the NetWorker Administration's screen. For more information on the NetWorker Administrator, see the *NetWorker Administrator's Guide*.



**Figure 4.1.1-1. NetWorker Administrator's Screen**

#### **4.1.1.3 Required Operating Environment**

For all COTS packages, appropriate information on operating environments, tunable parameters, environment variables, and a list of vendor documentation can be found in a CM controlled document for each product. To find the documentation for EMC Networker, refer to the Release Notes posted on the EMD Baseline Information System web page at your local site.

#### **4.1.1.4 Databases**

The \$Installed\_dir/nsr/index directory maintains a database of files that have been backed up and the availability of the backup such as tape number and whether it is online or on a volume of tapes that has been migrated. This information is in a proprietary format that can only be read using the NetWorker Recover (nwrecover) tool.

#### **4.1.1.5 Special Constraints**

None.

#### **4.1.1.6 Outputs**

NetWorker provides the capability to print and save contents of a window as a way to maintain records of NetWorker activities and configurations. For more information, see Chapter 3, Using NetWorker Windows and Menus, *NetWorker Administrator's Guide*.

#### **4.1.1.7 Event and Error Messages**

See Appendix A, Notes and Troubleshooting Tips, *NetWorker Administrator's Guide*.

#### **4.1.1.8 Reports**

None.

### **4.1.2 StorNext Storage Manager**

StorNext Storage Manager (SNSM) is a hierarchical storage management (HSM) system for managing data on multiple storage tiers consisting of disk and tape resources. The SNSM has replaced the SGI dependent AMASS archive system. At the hardware and system level, SNSM has resulted in replacing multiple SGI platforms running AMASS with commodity-based Linux servers running SNSM. In addition, the AMASS disk cache that had resided on direct attached disk storage has been replaced by SAN attached disk storage managed by SNSM.

The purpose of SNSM in the ECS is to provide an easy-to-use interface for large data archives. In terms of hardware, the archive hosts in the ECS architecture are Hewlett-Packard (HP) DL570 servers running Red Hat Linux. These two HP archive servers are configured within a High Availability (HA) architecture to maximize the uptime of the ECS archive at each DAAC.

The StorNext system spans multiple hosts within the ECS configuration at each DAAC. Although only the HP archive SNSM servers can access the tape libraries; all hosts within the Fibre Channel (FC) Storage Area Network (SAN) can read and write to the filesystems. These non-archive hosts are referred to as StorNext clients, whereas the archive hosts are referred to as StorNext servers or MetaData Controllers (MDC). StorNext clients are dependent on the StorNext Servers. For example client machines can be shutdown and restarted at anytime without an effect on the StorNext servers or other StorNext clients, but when the StorNext servers are down all clients' StorNext filesystems will be non-functional.

The StorNext client/server system functions across the SAN using a private Ethernet network to pass MetaData tokens between the clients and the server. Simplified, this process can be described as a client asking for a file over the Ethernet and the server response telling the client where on the SAN the file segments are located. Therefore any problems with this private Ethernet network will cause a systemic problem to StorNext.

The type of library used in ECS is the Quantum Scalar Series, using LTO 4 fibre channel tape drives. The tape drives are connected to the Storage Area Network (SAN) through a storage networking blade in the library. .

The Quantum Scalar i500 is used at the National Snow and Ice Data Center (NSIDC) and the ECS Development Facility (EDF). The Quantum Scalar i2000 is used at Eros Data Center (EDC), Atmospheric Science Data Center (ASDC) and the Performance Verification Center (PVC).

#### **4.1.2.1 Quick Start Using StorNext**

This section provides an introductory look at SNSM GUIs. For more information about StorNext, refer to the *StorNext System Administrator Guide*.

StorNext documentation is located via the following URL:

<http://www.quantum.com/ServiceandSupport/SoftwareandDocumentationDownloads/ArchivedManuals/Index.aspx#storNext>

#### 4.1.2.1.1 Starting the StorNext GUI

The StorNext Servers can be completely controlled via the set of GUI interfaces, although like most products once you get familiar with the command line interface (CLI) versions of the commands you may find them more convenient. The StorNext GUI is Web based, and can be accessed by any Web enabled machines with the proper Java libraries. The StorNext Servers will always have the prerequisites installed to run the StorNext GUI.

Bring up a Web browser and enter the name of the StorNext server using port 81, e.g. *p4sm101:81*. The result will be the StorNext login window although multiple accounts can be created within the StorNext only the *admin* account has full control of the archive. Enter the username (*admin*) and password in the spaces provided. The primary StorNext GUI will be displayed. From this GUI each filesystem is displayed, indicating on colored bars the filesystem percent capacity and, for managed filesystems only, the low and high watermark locations. All libraries are listed as well as each tape drive and the volume currently mounted.

The primary StorNext GUI has three modes *Home*, *SNFS*, & *SNSM*. Select the required mode with the buttons, so named, on the left side of the primary StorNext GUI. The Home mode is shown below in Figure 4.1.2-1.

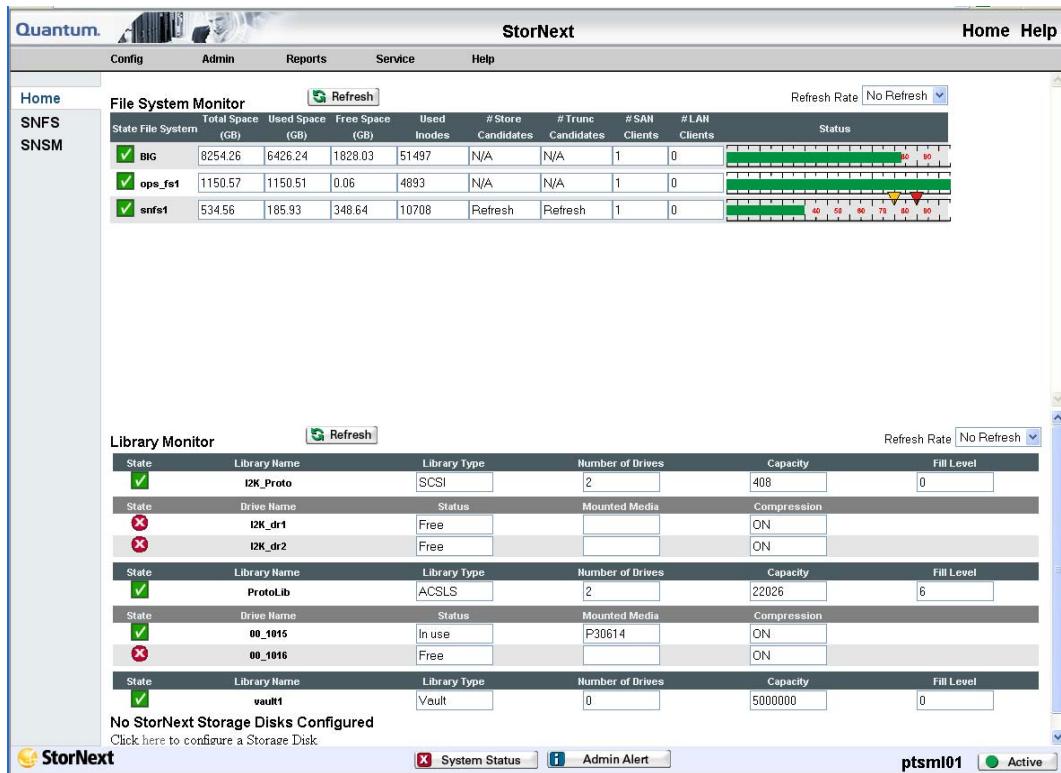


Figure 4.1.2-1. StorNext Home Mode Screen

#### 4.1.2.1.2 Starting and Stopping StorNext

StorNext is normally started at boot and shutdown when the system is shutdown. StorNext can also be started and stopped from the command line. These commands are applicable to both StorNext Servers and StorNext Clients

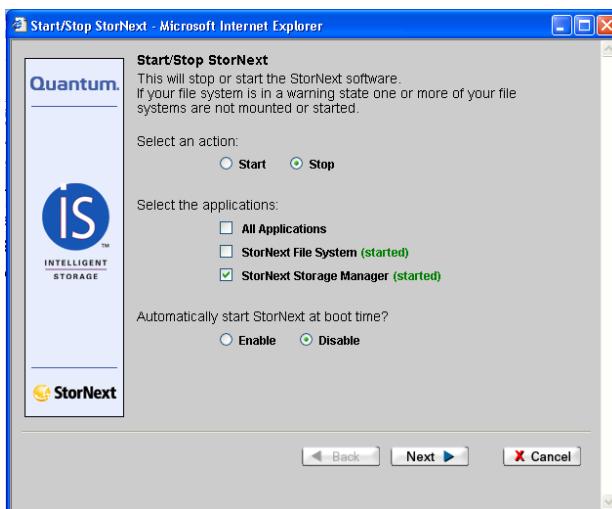
To start StorNext from the command line prompt use: (as superuser or root)

```
# /etc/init.d/cvfs start
```

To stop StorNext, type:

```
# /etc/init.d/cvfs stop
```

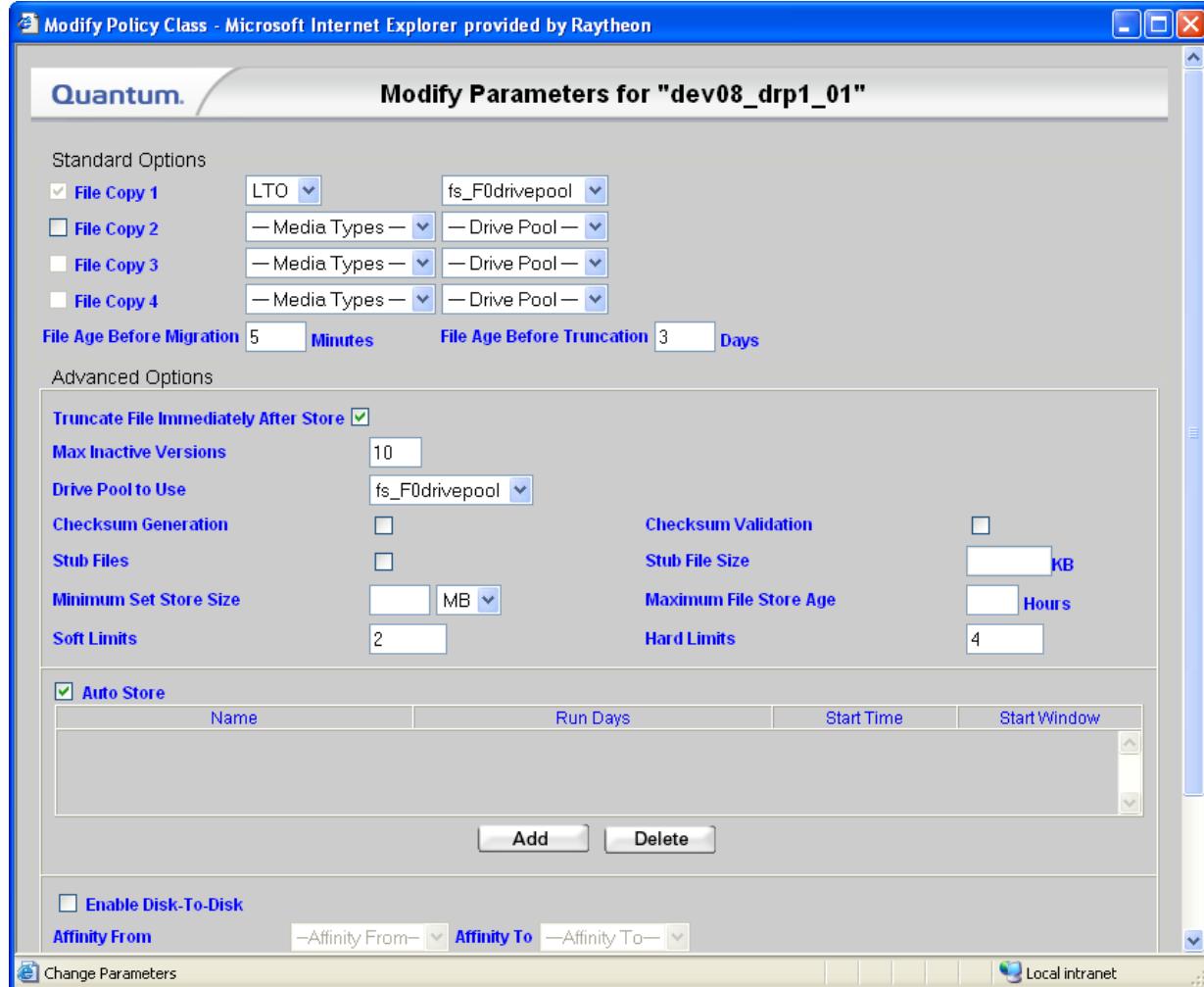
The StorNext Start/Stop GUI is accessible by selecting the StorNext Server button in the lower right hand corner of the primary StorNext GUI. From this GUI window StorNext Storage Manager can be shutdown separately from the StorNext Filesystem, as well as controlling StorNext startup at boot time. The Start/Stop screen is shown in Figure 4.1.2-2.



**Figure 4.1.2-2. Start/Stop StorNext Screen**

#### 4.1.2.1.3 StorNext Policies

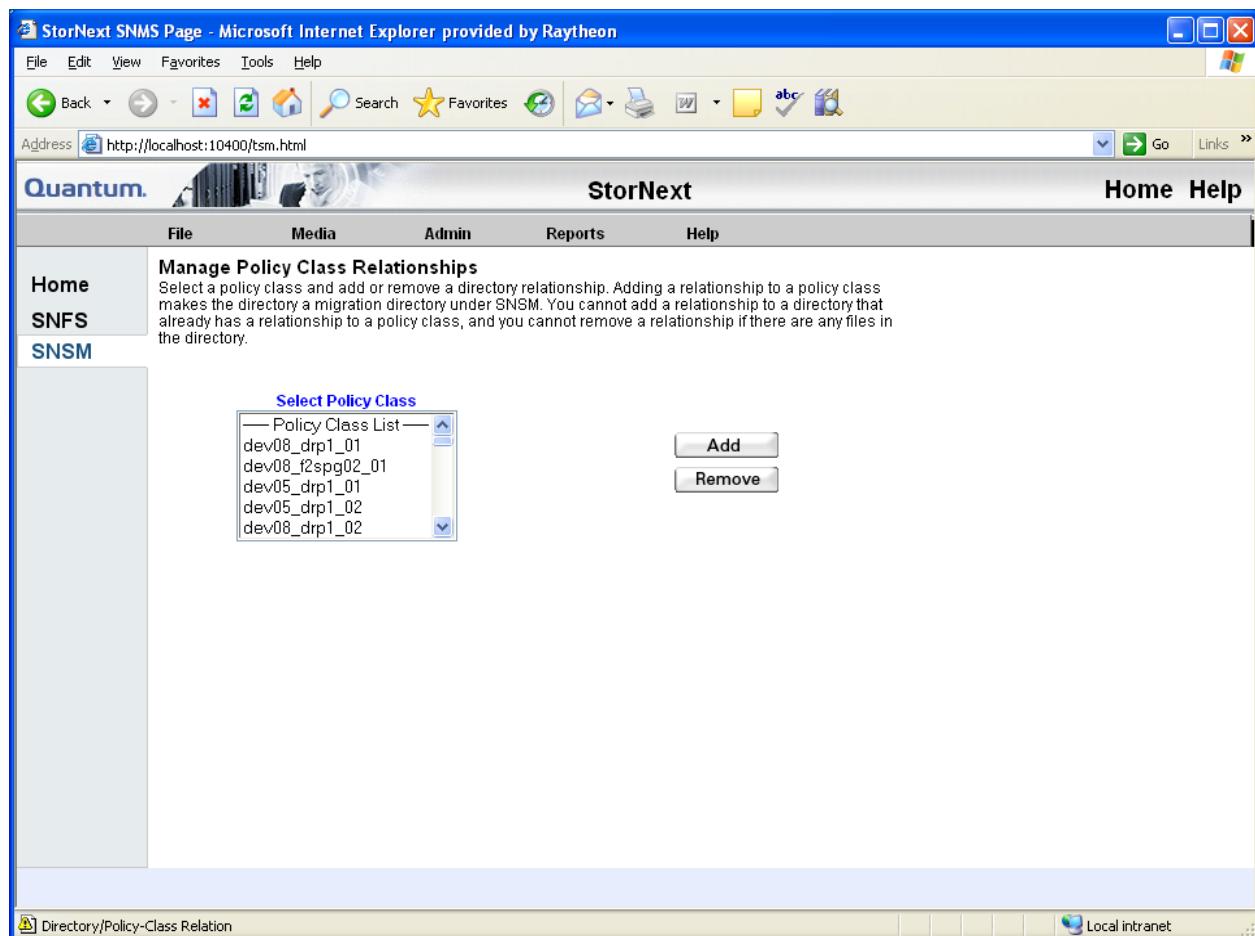
A StorNext Policy controls the media type, drive pool, and file migration & truncation features. Bring up the StorNext Policy window by selecting the SNMS mode on the primary StorNext GUI, select the Admin tab, and then Policy Classes from the pull down. Here you can add a new policy class or modify an existing class. Never use the delete option. The Modify Policy Class window is shown below in Figure 4.1.2-3 as an example policy class.



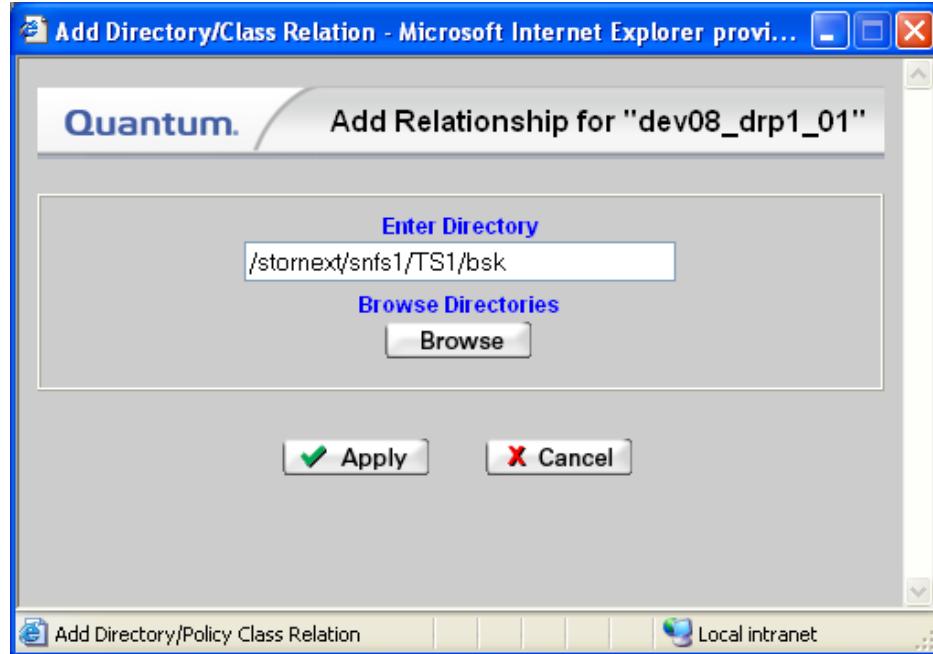
**Figure 4.1.2-3. Modify Policy Class Screen**

#### 4.1.2.1.4 StorNext Relations

Policy classes can be related to one or more directories (a relation point) and all files in that directory and sub-directories are governed by the policy class. A relation is the linking of a policy class and a directory. A policy class can have more than one relation point but a relation point can only have one policy class. Bring up the StorNext Relation window shown in Figure 4.1.2-4 by selecting the SNMS mode on the primary StorNext GUI, select the Admin tab, and then Relations from the pull down. On this GUI select the policy class to which a relation point is to be added and select the *Add* button. This will display the *Add Relationship* GUI shown in Figure 4.1.2-5.



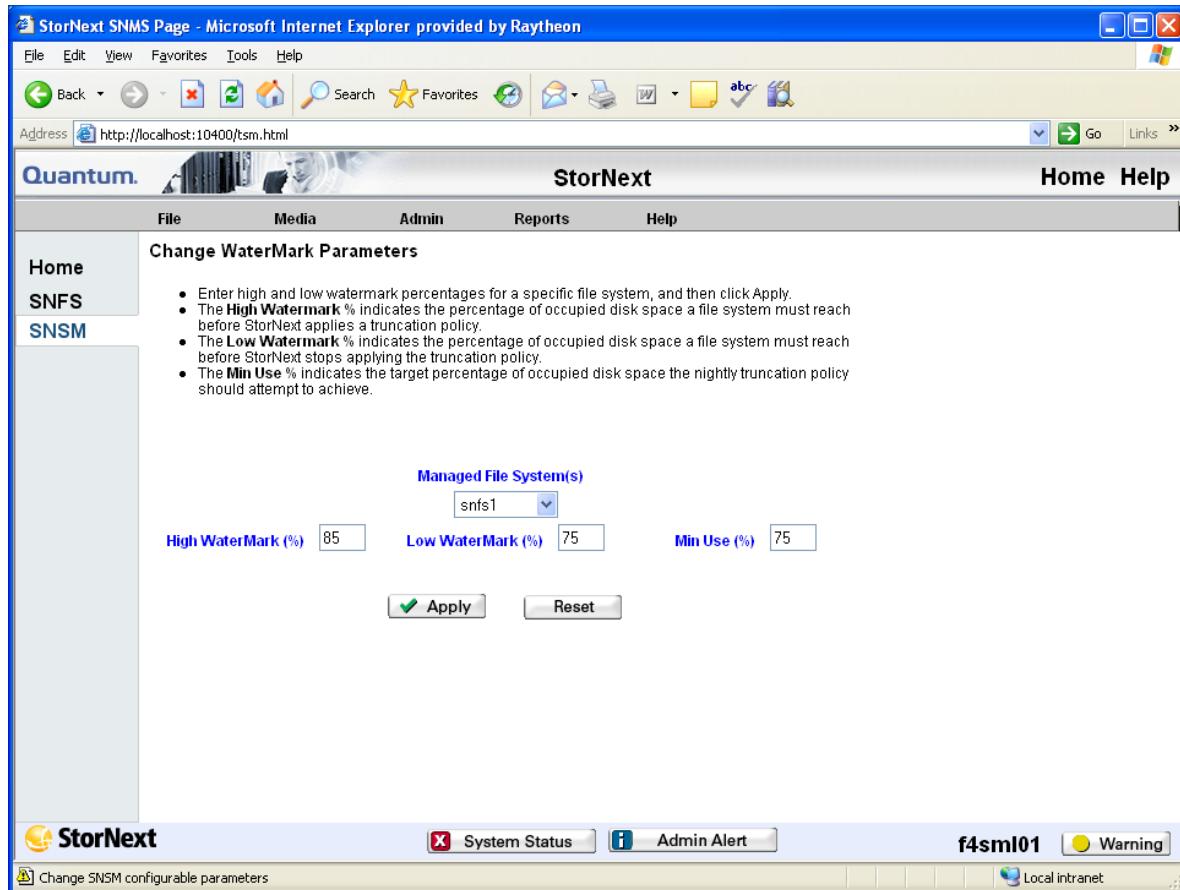
**Figure 4.1.2-4. StorNext Relation Screen**



**Figure 4.1.2-5. Add Relationships GUI Screen**

#### 4.1.2.1.5 StorNext Watermarks

StorNext filesystem watermarks control the filesystems truncation policy. Truncation is the process in which a file that is both on disk and on tape, has the on disk version removed. The header of a truncated file remains, whereas an `ls -l` command on a file and a truncated file will return the same results, an `ls -s` command will return a value of zero for a truncated file. The high watermark on a filesystem is the threshold at which truncation begins, and the low watermark is the threshold at which truncation stops. Bring up the water mark parameters by selecting the SNMS mode on the primary StorNext GUI, select the Admin tab, and then Water Mark Parameters from the pull down. The StorNext Water Mark Parameter window will be displayed as shown in Figure 4.1.2-6.



**Figure 4.1.2-6. StorNext Water Mark Parameter Screen**

#### 4.1.2.2 StorNext Reports

StorNext reports provide information as to the holdings and use of the StorNext filesystems. Various reports are available including; backups, drives, files, media, policy classes, relations, etc. Generate reports from the SNMS mode on the primary StorNext GUI, select Reports, and then select the desired report type. A fictional example of a Policy Class Information Report is shown below in Figure 4.1.2-7.

Policy Class Information Report - Microsoft Internet Explorer provided by Raytheon

File Edit View Favorites Tools Help

Quantum. Policy Class Information Report

Policy Class: dev01\_drp1\_01 Associated Directories: /stornext/snfs1/DEV01/AMSR:/stornext/snfs1/DEV01/ANCILLARY:/stornext/snfs1/DEV01/ASTER:/stornext/snfs1/DEV01/Browse:/stornext/snfs1/DEV01/Cache:/stornext/snfs1/DEV01/Config:/stornext/snfs1/DEV01/Logs:/stornext/snfs1/DEV01/Scratch:/stornext/snfs1/DEV01/Temp:/stornext/snfs1/DEV01/Trash:/stornext/snfs1/DEV01/Unknown:/stornext/snfs1/DEV01/Work:/stornext/snfs1/DEV01/

File Copy 1	File Copy 2	File Copy 3	File Copy 4	# Media Associated	Drive Pool
LTO (default)	N/A	N/A	N/A	24	fs_F0drivepool
Minimum Store Time (minutes)	Minimum Trunc Time (days)	Max Backup Sets	Truncate File Immediately After Store	Checksum Validation	Checksum Generation
5	3	10	On	DISABLED	DISABLED
Minimum Set Store Size (MB)	Maximum File Store Age (hours)	Disk-to-Disk	Affinity From	Affinity To	File Age Before Relocation
n/a	n/a	DISABLED	N/A	N/A	N/A
Media Clean Pool	Stub Files	Stub File Size (KBytes)	Auto Store		
SYSTEM	Disabled	0	yes		

Close

**Figure 4.1.2-7. Policy Class Information Report Screen**

#### 4.1.2.3 StorNext Logging

The StorNext system is composed of many subsystem components producing multiple log files, which are displayed in Table 4.1.2-1.

**Table 4.1.2-1. StorNext Subsystem Component**

<b>Subsystem</b>	<b>Acronym</b>	<b>Log File Location</b>
Tertiary Storage Manager	TSM	/usr/adic/TSM/logs/tac/tac_00
Media Storage Manager	MSM	/usr/adic/MSM/logs/tac/tac_00
Data Storage Manager	DSM	/usr/adic/DSM/data/<fsname>/log/cvlog
Apache	N/A	/usr/adic/apache/logs/error_log
Apache	N/A	/usr/adic/apache/logs/access.log
Apache	N/A	/usr/adic/apache/logs/httpd.pid
Linter Database	N/A	/usr/adic/database/db/linter.out
Trash Can Manager	TCM	/usr/adic/TCM/logs/tac/tac_00

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### 4.1.3 ISQL

ISQL is a stand-alone structured query language (SQL) command parser utility provided with the Sybase SQL Server. It is available on all platforms that Sybase is available. ISQL is executed directly from the operating system level and is used to interact with a SQL server and the databases on a SQL server. It allows for the interactive issuance and execution of Sybase Transact-SQL statements and sending the Transact-SQL commands to the SQL Server, formatting the results and printing them on the standard output.

ISQL is used to perform the operator functions listed in Table 4.1.3-1.

**Table 4.1.3-1. Common ECS Operator Functions Performed with ISQL (1 of 4)**

Operating Function	Command/Script	Description	When and Why to Use
Monitor database and user activity	Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for the Overview of System Administration in the <i>Sybase ASE System Administration Guide</i>	There are various database management activities performed in Sybase ASE Server to keep the databases running for day-to-day operations	Database and user activity is monitored to manage and control various day-to-day operations of the Distributed Active Archive Center (DAAC) and to prevent or resolve any unforeseen problems
Provide and control users' database access	<ul style="list-style-type: none"> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Managing Adaptive Server Logins and Database Users in the <i>Sybase ASE System Administration Guide</i></li> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Managing User Permissions in the <i>Sybase ASE System Administration Guide</i></li> </ul>	<ul style="list-style-type: none"> <li>• Create user accounts, set account default databases and other account configurable items</li> <li>• Grant proper permissions to user accounts</li> </ul>	<ul style="list-style-type: none"> <li>• It may be necessary to provide access to individual users or groups of users on a temporary, permanent, or on-demand basis</li> <li>• Access to data at the DAAC should be controlled so it is not accidentally deleted, modified, or obtained without permission</li> </ul>

**Table 4.1.3-1. Common ECS Operator Functions Performed with ISQL (2 of 4)**

Operating Function	Command/Script	Description	When and Why to Use
Grant roles and assign various privileges on database objects	Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Managing User Permissions - Granting and Revoking roles in the <i>Sybase ASE System Administration Guide</i>	Roles and user accounts are necessary to provide access and security to databases under Sybase ASE Server	<ul style="list-style-type: none"> <li>Proper database management roles such as SSO (System Security Officer), SA (System Administrator), OPER (Operator) are essential to the proper management of the databases at DAACs</li> <li>Providing the proper level of privileges to each user of the databases prevents any accidental or unforeseen mishaps with the data (data integrity is also maintained)</li> </ul>
Monitor, control, and manage the use of disk space, memory and connections	<ul style="list-style-type: none"> <li>Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for the System Administration for Beginners (Allocating Physical Resources) in the <i>Sybase ASE System Administration Guide</i></li> <li>Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Checking Database Consistency in the <i>Sybase ASE System Administration Guide</i></li> </ul>	<ul style="list-style-type: none"> <li>All databases running under Sybase ASE Server are physically stored on various devices and require various amounts of memory based on the usage of data</li> <li>These resources have to be properly monitored</li> </ul>	<ul style="list-style-type: none"> <li>Resources for storage and manipulation of data are always at a premium</li> <li>Proper management of these resources is essential in reducing errors, database crashes and unwanted downtime</li> </ul>

**Table 4.1.3-1. Common ECS Operator Functions Performed with ISQL (3 of 4)**

Operating Function	Command/Script	Description	When and Why to Use
Backup and restore databases	<ul style="list-style-type: none"> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Developing a Backup and Recovery Plan in the <i>Sybase ASE System Administration Guide</i></li> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Backing up and Restoring user databases, in the <i>Sybase ASE System Administration Guide</i></li> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Backing up and Restoring the system databases in the <i>Sybase ASE System Administration Guide</i></li> </ul>	Backup of databases provides for quick recovery and maintenance of data integrity	<ul style="list-style-type: none"> <li>• Most Database Administrators perform a daily backup of all their databases and perform recovery operations when a database crashes and is unrecoverable by other recovery methods</li> <li>• Proper backup and recovery plans allow for full, quick recovery and zero loss of data</li> <li>• Regular backup of data, is essential in reducing downtime in case of a database crash</li> </ul>
Diagnose system problems	<ul style="list-style-type: none"> <li>• Refer to Sybase Online documentation at <a href="http://sybooks.sybase.com">sybooks.sybase.com</a> for Diagnosing System Problems in the <i>Sybase System ASE Administration Guide</i></li> <li>• Also see the <i>Sybase ASE Server Troubleshooting and Error Messages Guide</i></li> </ul>	<ul style="list-style-type: none"> <li>• Diagnosing problems with the operation of ASE Server is a regular part of database administration tasks</li> <li>• ISQL is used as a command line tool for interfacing with the ASE Server</li> </ul>	<ul style="list-style-type: none"> <li>• Anytime the ASE server is not performing according to expectation or any database on SQL Server has crashed, the problem(s) must be diagnosed by checking current SQL Server status information</li> <li>• All problems must be properly resolved for successful operation of SQL Server</li> </ul>

**Table 4.1.3-1. Common ECS Operator Functions Performed with ISQL (4 of 4)**

Operating Function	Command/Script	Description	When and Why to Use
Performance and Tuning Guide	<i>Performance and Tuning Guide (all volumes)</i>	A continuous operations and administration activity can involve any of the above listed operating functions to make sure the ASE Server makes best use of its resources and to gain maximum performance from the ASE Server	The ASE Server is fine-tuned whenever storage or data requirements have changed, number of users have changed, new databases are added or existing databases are deleted, any SQL Server settings are modified, or any external environment changes have occurred which can impact the ASE Server

In addition, the DAAC user community can use ISQL to:

- request data from various databases by issuing Transact-SQL statements
- insert, update, or delete data from various databases by issuing Transact-SQL statements
- change their passwords

#### **4.1.3.1 Quick Start Using ISQL**

This section presents an orientation of ISQL.

Other online manuals that the operator can find useful are:

- *Sybase ASE System Administration Guide* -ASE Server administration issues
- *Configuration Guide Adaptive Server Enterprise for Linux* -operating-system specific system administration tasks
- *Open Client DB-Library/C Reference Manual* -man pages and code samples for the SQL Server interface library, Open Client DB-Library
- *Sybase Installation Guide Adaptive Server Enterprise for Linux* -installation procedures for ASE Server
- *ASE Server Reference Manual (all volumes)* (commands and system procedures)
- *Sybase ASE Server Troubleshooting: Error Messages Advanced Resolutions*

Further documentation support for Sybase's ISQL can be found at the Sybase home page at:  
<http://sybooks.sybase.com/>

##### **4.1.3.1.1 Invoking ISQL from the Command Line Interface**

To execute ISQL from the command line prompt use:

**isql**

For detailed instructions on how to invoke ISQL refer to Sybase Online documentation for Using the ISQL Utility documentation in the Adaptive Server Enterprise Utility Guide.

### **4.1.3.2 ISQL Main Screen**

There is no ISQL GUI. The ISQL uses a command line interface for operator communications.

### **4.1.3.3 Required Operating Environment**

The utility program ISQL is invoked directly from the Linux operating system via the command line. If open client is automounted then ISQL can be invoked from any machine.

#### **4.1.3.3.1 Interfaces and Data Types**

ASE Server requires an interface file to map logical server names to physical network information about those servers. The interface file includes server name, network address, and the port number on which the server listens for queries.

#### **4.1.3.4 Databases**

For more information on Sybase ASE Server databases, refer to the SYBASE online documentation for the *System Administration Guide*.

#### **4.1.3.5 Special Constraints**

None.

#### **4.1.3.6 Outputs**

Output from the ISQL consists of database updates or additions to the databases referenced in Section 4.1.3.4, and error and event messages referenced in Section 4.1.3.7.

ISQL does not provide formatting options for the output, but the **-n** option eliminates ISQL prompts, while **-e** includes each command issued to ISQL in the output. Other tools can then be used to reformat the output. For further information on formatting ISQL output, refer to the *Adaptive Server Enterprise Utility Guide*.

#### **4.1.3.7 Event and Error Messages**

Sybase ASE Server issues both status and error messages from the ASE Server and ISQL formats them to the designated output. For details on setting output options for ISQL refer to the *Adaptive Server Enterprise Utility Guide*.

For more information on error messages, their cause and corrective actions, refer to the online Troubleshooting and Error Messages Guide.

#### **4.1.3.8 Reports**

None.

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#### **4.1.4 Sybase Replication Server**

Deleted. Not applicable for Release 7.22.

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#### **4.1.5 ECS Assistant**

The ECS Assistant (ECSAssist) is a custom program that simplifies the process of installation, testing and management of ECS custom code. This utility is basically an installation tool having practical application in the operations environment. The tool is used for installing software and maintaining the information related to that software. Only the Subsystem Manager function of ECSAssist should be used in the ECS operational environment.

Table 4.1.5-1 summarizes the functions that ECSAssist provides.

***Table 4.1.5-1. Common Tasks Performed with ECSAssist***

<b>Task</b>	<b>Description</b>	<b>When and Why to Use</b>
Subsystem Manager actions	Selections on the Subsystem Manager's screen, see section 4.1.5.2.1.	Installing software and performing maintenance on software parameters.
Database	Used to install, drop, patch, and update subsystem specific databases.	When database updates or upgrades are implemented. See Section 4.1.5.2.1.1. See Section 4.1.5.2.1.2 to provide parameters to start database scripts.
Install	Used to install ECS custom software into the selected mode.	As necessary to install software. See Section 4.1.5.2.1.3.
Configuration	Creates Configuration File (CFG) and Parameter Configuration Files (PCFG) for selected components.	When installing or updating software components. See Section 4.1.5.2.1.4 for configuration parameters entered by the user. See Section 4.1.5.2.1.5 to create CFG and PCFG files for selected components.
Registry Data Patch	Used to update the registry database	As desired for registry database updates. See Section 4.1.5.2.1.6.
Stage Area Installation	Used to capture the location of the delivered software staging area.	As desired to identify a staging area. See Section 4.1.5.2.1.7.

#### **4.1.5.1 Quick Start Using ECSAssist**

To execute ECSAssist from the command line prompt use the following procedure:

**>./EcCoAssist source\_file location [ssh]**

where **source\_file location** can be:

**/tools/common/ea** – or –

**/ecs/formal/COMMON/scripts** – or –

any directory where ECSAssist resides.

Type **ssh**, as an argument, if you want ECSAssist Simple Installation (EASI) to use Secure Shell to connect to hosts.

The default is to use Remote Shell.

**>setenv DISPLAY <current\_host>**

**>setenv ECS\_HOME /usr/ecs**

**>setenv DEBUG 1** (Set only to capture any errors generated by ECSAssist)

The **/tools** mount point must be mounted.

File **/tools/common/ea** must exist in the path. (This can be set in the **.cshrc** or **.kshrc** file)

**>EA**

...or, if this alias is not available, use the following:

**> /tools/common/ea/EcCoAssist /tools/common/ea [ssh] &**

A screen labeled "Thanks for choosing ECS Assistant" appears for 5 seconds.

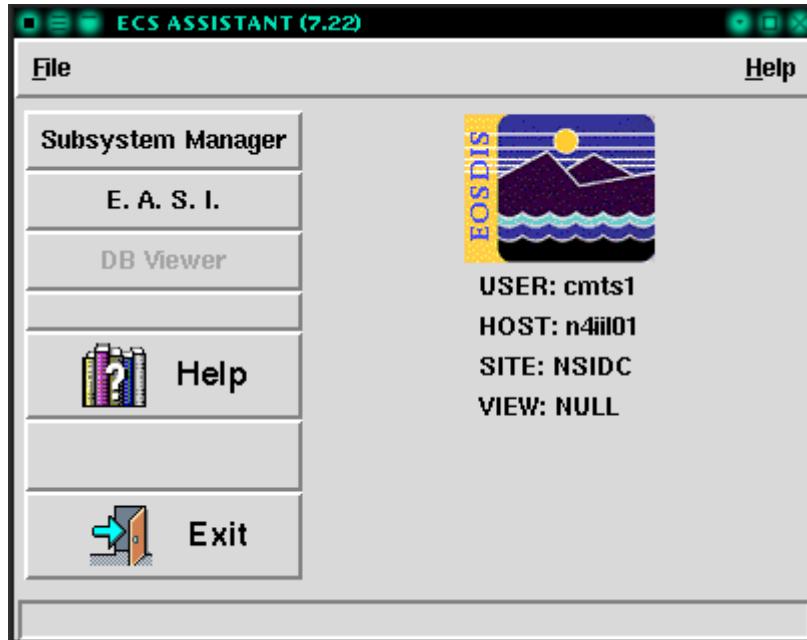
The following text is displayed:

"debug is [ enabled | disabled ]" *depending if DEBUG is set.*

EASI uses [Secure Shell | Remote Shell] to connect to hosts...

#### **4.1.5.2 ECSAssist Main Screen**

The ECSAssist main screen shown in Figure 4.1.5-1 identifies the user, host machine, ECS site and ClearCase view in effect. From the main screen, the user may invoke ECSAssist functions as described in Table 4.1.5-2.



**Figure 4.1.5-1. ECSAssist Main Screen**

Table 4.1.5-2 summarizes the information and capabilities presented on the ECSAssist Main Screen.

**Table 4.1.5-2. ECSAssist Options and Field Descriptions (1 of 2)**

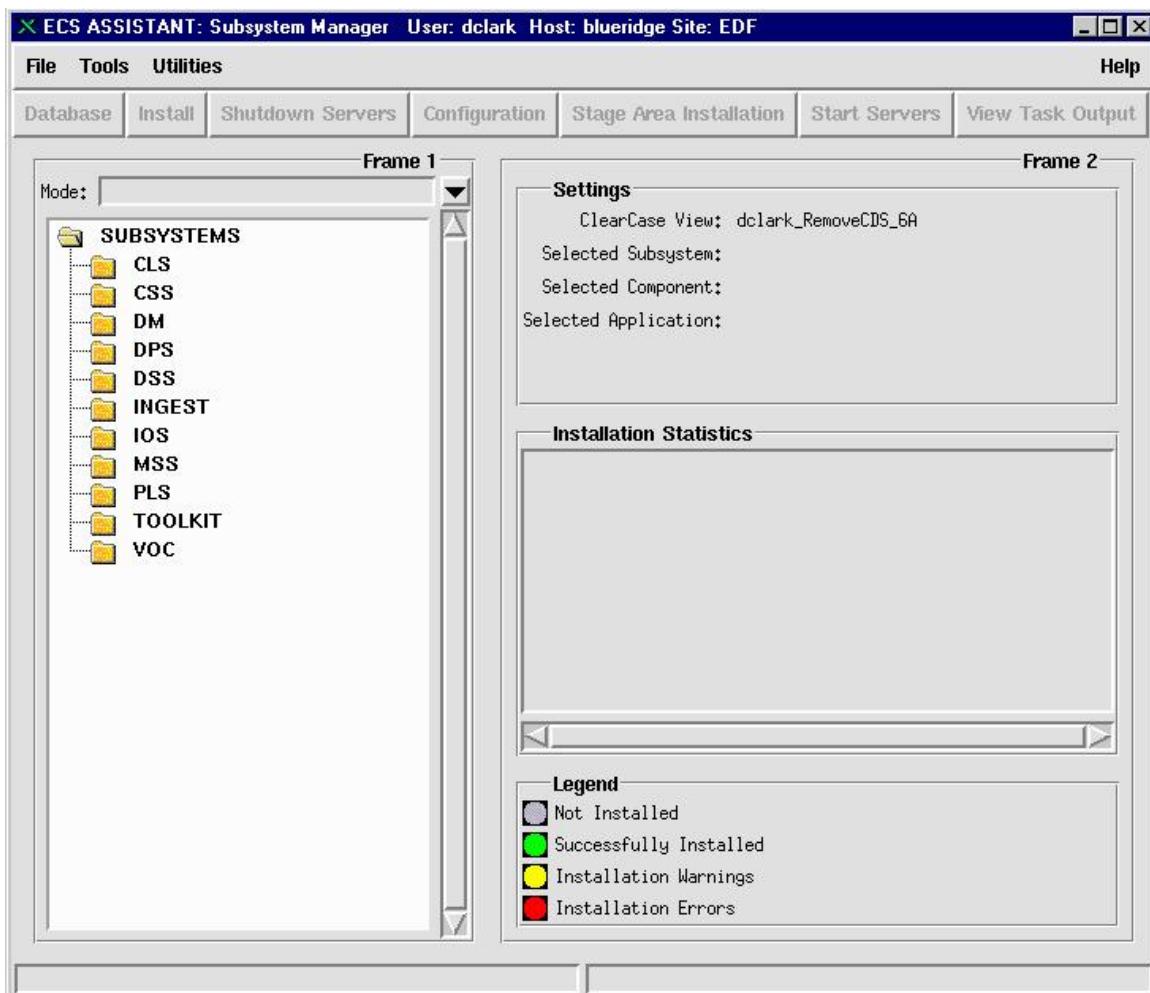
Option/Field	Action	Description
User:	Display only	User's logon ID.
Host:	Display only	Host on which executing.
Site:	Display only	ECS site ID.
View	Display only	Clearcase view in effect.
<i>Toolbar menus</i>		
File	Click on File on the toolbar of the ECS Assistant screen.	Pull down menu showing the following options.
Clear Debug File	In the File menu, click Clear Debug File.	Clear contents of debug log file.
Preferences	In the File menu, click Preferences.	Allows user to select preferences.
Exit	Click Exit	Terminates ECSAssist execution.
Help	Click on Help on the ECS Assistant screen Toolbar.	Pulls down menu showing "Contents", "Read Me" and "About" selections.

**Table 4.1.5-2. ECSAssist Options and Field Descriptions (2 of 2)**

Option/Field	Action	Description
<i>Function buttons:</i>		
Subsystem Manager	Perform software installation and maintenance functions.	See Section 4.1.5.2.1.
E.A.S.I.	Clicking this button invokes the EASI option.	Allows one user to facilitate a complete (FULL) or custom installation of ECS software.
Help	Click on Help	Brings up Help on use of ECSAssist.
Exit	Click on Exit	Terminates ECSAssist execution.

#### **4.1.5.2.1 The ECSAssist Subsystem Manager**

Click on the **Subsystem Manager** button in the ECSAssist Main Screen. Figure 4.1.5-2 below presents the ECSAssist Subsystem Manager screen.



**Figure 4.1.5-2. Subsystem Manager Screen**

The Subsystem Manager toolbar and **Common Tasks** options are described in Table 4.1.5-3.

**Table 4.1.5-3. ECSAssist Subsystem Manager Toolbar (1 of 2)**

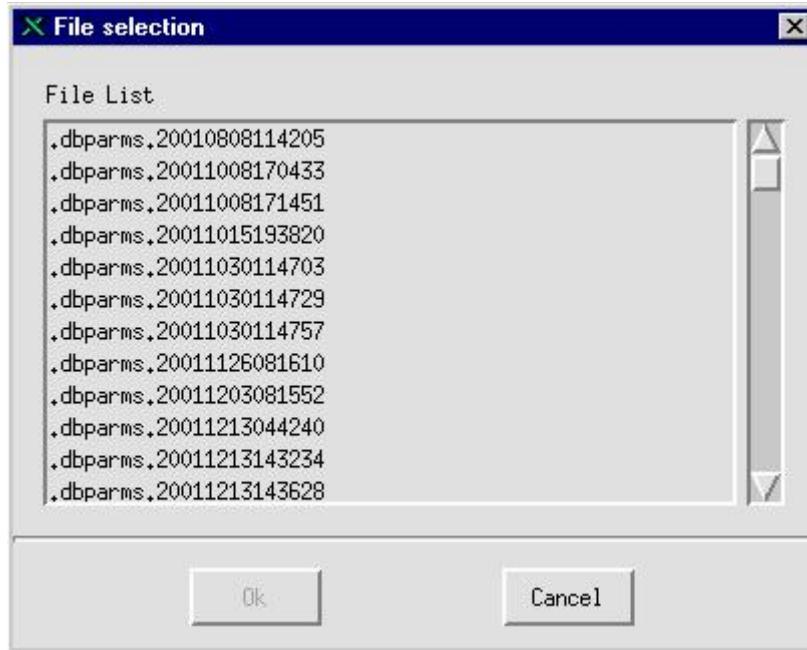
Option/Field	Action	Description
<b>Toolbar options:</b>		
<b>File</b>	Click on File on the Subsystem Manager screen Toolbar.	Pull down menu showing Save As and Close selections.
Clear Debug File	In the File menu, click Clear Debug File.	Allows user to clear current contents from debug file /[HOME_DIR]/.EA_DebugLog.
ClearTask Output File	In the File menu, click Clear Task output File.	Allows users to clear the file containing installation specific results.
Preferences	In the file menu, click Preferences.	Allows users to select preferences.
Exit	In the file menu, click Exit.	Exits Subsystem Manager.
<b>Tools</b>		
Clean Logs	In the Tools menu, click Clean logs.	Allows users to remove outdated log files.
System Messages	In the Tools menu, click on "System Messages."	Displays system messages from /var/adm.
Re-Read .sitemap file	In the Tools menu, click on "Re-read .sitemap file."	If there is a change to the .sitemap file, this function re-reads to obtain the latest information.
Override .sitemap file (ECS Development Facility (EDF) Only)	In the Tools menu. Click "Override .sitemap file."	Only available to EDF sites. Used for custom sitemap files.
Registry Data Patch	In the Tools menu, click "Registry Data Patch."	Allows user to update registry database.
<b>Utilities</b>		
<b>Help</b>	Click on Help on the Subsystem Manager Screen Toolbar.	Displays latest information about ECSAssist.

**Table 4.1.5-3. ECSAssist Subsystem Manager Toolbar (2 of 2)**

Option/Field	Action	Description
<b>Common Tasks</b>		Area of the screen below toolbar containing the following specialized task buttons.
Database	Click on Database button	Used to install, drop, patch, and update subsystem specific databases.
Install	Click on Install button	Used to install ECS custom software into the selected mode.
Configuration	Click on Configuration button	Creates CFG and PCFG files for selected components.
Stage Area Installation	Click on Stage Area Installation button	Used to capture the location of the staging area.
View Task Output	Used to view task log files.	As desired to view log files.
<b>Frame 1</b>	Display Only	--
Mode	Listbox Click	Click to display a list of available modes.
Subsystems Hierarchical Listing	Double Click	Double click to display associated components, applications and executables.
<b>Frame 2</b>	Display Only	--
Settings	Display Only	Lists user's current selections.
Installation Statistics	Display Only	List installation specific statistics.
Legend	Display Only	When an install task has completed, a color of Yellow, Red or Green highlights the selected subsystem to denote the severity of the install as follows: Green – Completed installation successfully Yellow – Install warnings Red - Install errors

#### **4.1.5.2.1.1 ECSAssist Subsystem Manager’s Database Configuration Screen**

The Database Configuration Screen is used to install, drop, patch, and update subsystem specific databases. From the ECSAssist Subsystem Manager screen, click the database button to initiate the database process. If there is more than one database parameter file (.dbparms) detected when the database button is pressed, ECSAssist asks which one to use with the File Selection popup window shown in Figure 4.1.5-3. The file selection popup window, above the “Ok” and “Cancel” buttons, contains the name of the database parameter files detected.



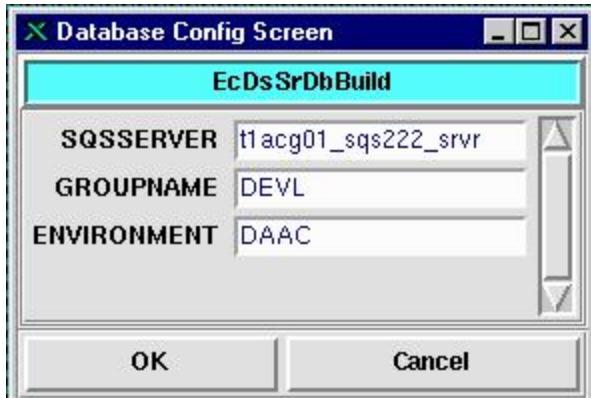
**Figure 4.1.5-3. File Selection Popup Window**

Select one of the .dbparms files to use and then click on the Ok button. The fields or options for this screen are described in Table 4.1.5-4.

**Table 4.1.5-4. Database Parameter File Selection Option/Field Descriptions**

Option/Field	Action	Description
File list	Click on the desired parameter file.	Contains list of .dbparms type files discovered. Click on the one to use and then click the Ok button.
Ok (button)	Click this after selecting a .dbparms type file in the file list.	Launches database script screen associated with the selected parameter file in the file list.
Cancel (button)	Click this after selecting a .dparms type file if you do not want to see a screen associated with the selected parameter file.	Closes the file list and the screen goes away.

On selection of a .dbparms file, ECSAssist brings up the Database Configuration Screen shown in Figure 4.1.5-4.



**Figure 4.1.5-4. Subsystem Manager Database Configuration Screen**

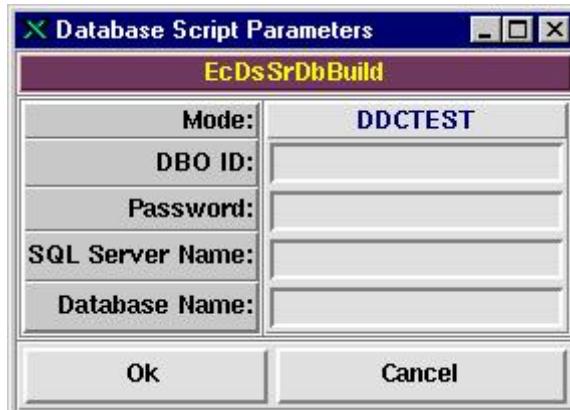
Table 4.1.5-5 describes the fields displayed on the “database” screen.

**Table 4.1.5-5. ECSAssist Subsystem Manager’s Database Configuration Screen Field Descriptions**

Option/Field	Action	Description
Database Config Screen	Display Only	Window title.
EcDsSrDbBuild	Display Only	Component passed from the Subsystem Manager screen.
SQSSERVER	Entry	Configurable item for the displayed Component.
GROUPNAME	Entry	Configurable item for the displayed Component.
ENVIRONMENT	Entry	Configurable item for the displayed Component.
OK	Click	Displays the database script screen.
Cancel	Click	Aborts process.

#### **4.1.5.2.1.2 ECSAssist Subsystem Manager’s Database Script Parameters Screen**

This screen is triggered from the ECSAssist Subsystem Manager’s “database” screen, Section 4.1.5.2.1.1 above. The screen is used to input the parameters to set up the database. In the ECSAssist Subsystem Manager’s Database Script Parameters screen, shown in Figure 4.1.5-5, the user must enter all parameters to initiate the respective database script.



**Figure 4.1.5-5. Subsystem Manager Database Script Parameters Screen**

Table 4.1.5-6 describes the control and information fields on the “database script parameters” screen.

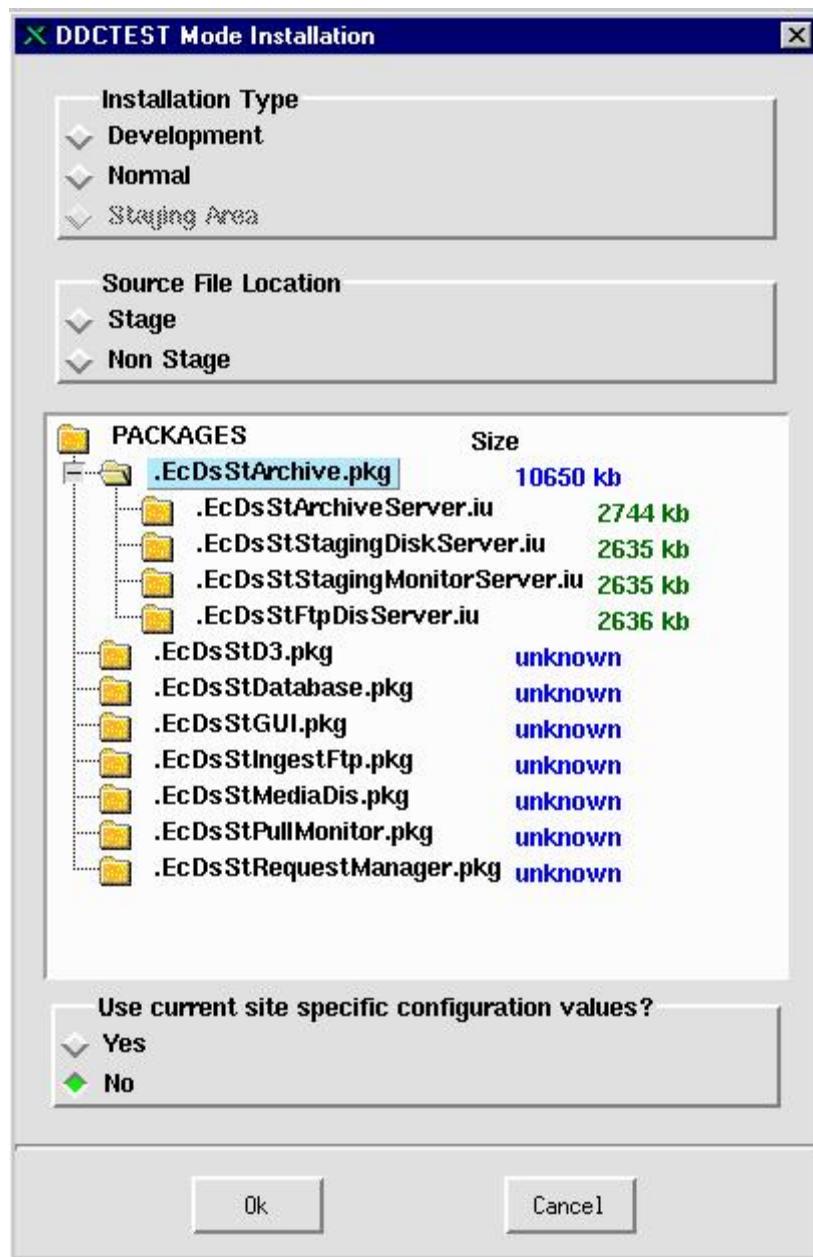
**Table 4.1.5-6. ECSAssist Subsystem Manager’s Database Script Parameters Screen Field Descriptions**

Option/Field	Action	Description
Database Script Parameters	Display Only	Window title
EcDsSrDbBuild	Display Only	Title
Mode	Display Only	Displays selected mode.
DBO ID	Entry	Enter dbo id
Password	Entry	Enter password
SQL Server Name	Entry	Enter sql server name
Database Name	Entry	Enter database name
OK	Click	Initiates process
Cancel	Click	Aborts process

#### 4.1.5.2.1.3 ECSAssist Subsystem Manager’s Install Screen

This screen is used to install ECS custom software into the selected mode. From the ECSAssist Subsystem Manager screen click the install button to initiate the installation process.

Figure 4.1.5-6 presents the Install screen.



**Figure 4.1.5-6. Subsystem Manager Install Screen**

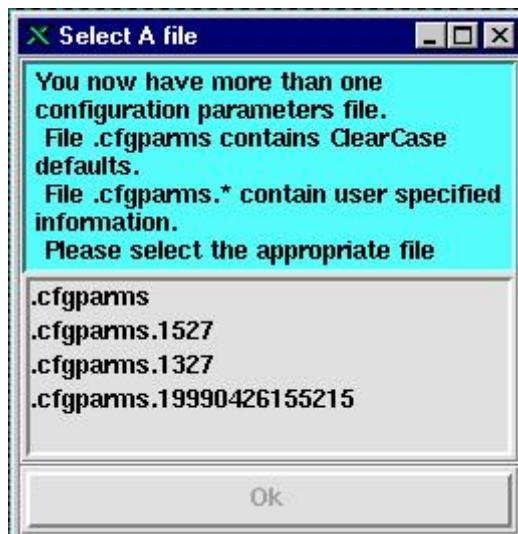
Table 4.1.5-7 describes the control and information fields on the install screen.

**Table 4.1.5-7. ECSAssist Subsystem Manager Install Option or Field Descriptions**

Option/Field	Action	Description
Installation Type	Display Only	Heading.
Development	Click	Creates symbolic links to ClearCase.
Normal	Click	Copies binaries and libraries to selected mode.
Staging Area	Click	Installs Mode from staging area.
Source File Location	Display Only	Heading.
Stage	Click	To obtain files from the nightly build.
Non Stage	Click	Allows testing of changes before a merge to branch is performed.
Packages	Click on the desired package	Contains list of packages discovered. Click on one to use and then click the Ok button.
Use current site specific configuration values?	Display Only	Heading.
Yes	Click	Use site-specific .cfgparms and .dbparms file.
No	Click	Do not use site-specific .cfgparms and .dbparms file. Allow the user to make the selection of choice.
Ok	Click	Executes installation process.
Cancel	Click	Aborts Installation process.

#### 4.1.5.2.1.4 ECSAssist Subsystem Manager's Configuration File Selection Screen

The configuration file selection window shown in Figure 4.1.5-7 allows a user to select a .cfgparms file with configuration values that were entered by the user or should be used when starting servers.



**Figure 4.1.5-7. Configuration File Selection Window**

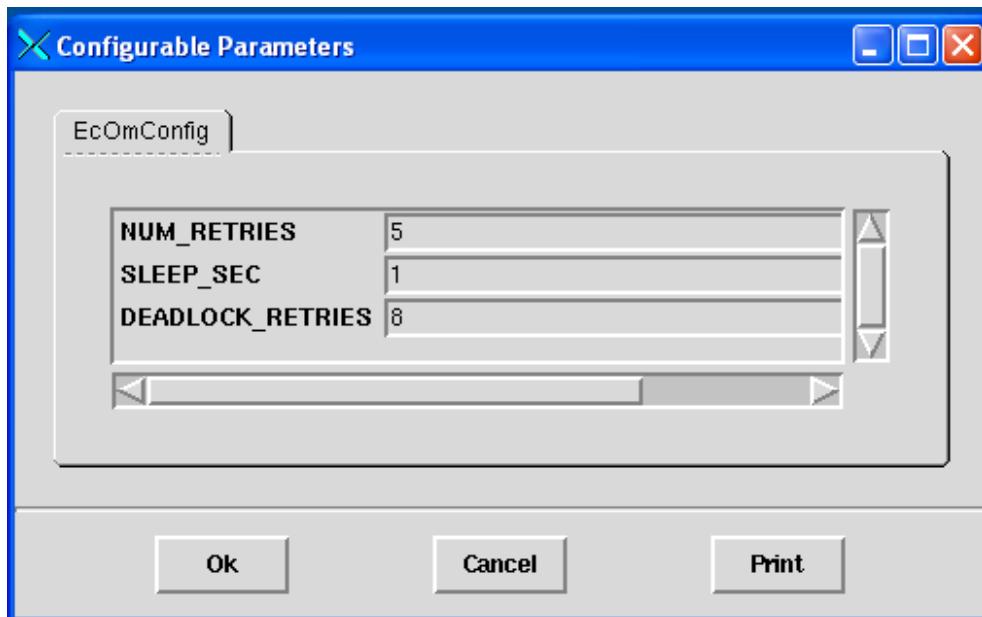
Table 4.1.5-8 describes the control and information fields on the configuration selection window.

**Table 4.1.5-8. Configuration File Selection Window Field Description**

Option/Field	Action	Description
Listbox	Click on entry in list	Select file of choice; enables Ok button.
Ok	Click	Launches configurable parameters screen.

#### 4.1.5.2.1.5 ECSAssist Subsystem Manager's Configurable Parameters Screen

Clicking the Configuration button on the ECSAssist Subsystem Manager screen brings up the Configurable Parameters window shown in Figure 4.1.5-8. Through this screen, ECSAssist creates CFG and PCFG files for selected components.



**Figure 4.1.5-8. Subsystem Manager Configurable Parameters Screen**

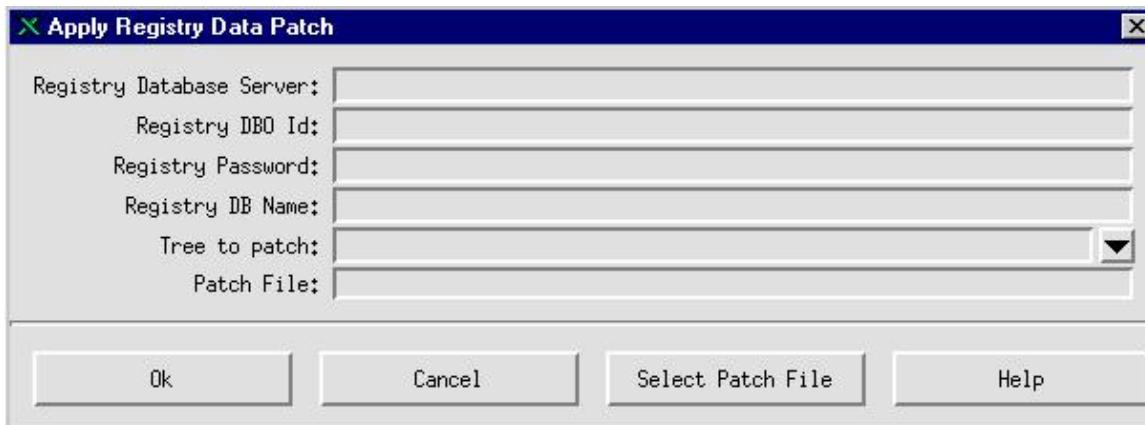
Table 4.1.5-9 describes the control and information fields on the Configurable Parameters screen.

**Table 4.1.5-9. ECSAssist Subsystem Manager Configurable Parameters Field Descriptions**

Option/Field	Action	Description
EcOmConfig	Display Only	--
Num_RETRIES	Enter	User enters specific number of retries.
SLEEP_SEC	Enter	User enters specific number of sleep seconds.
DEADLOCK_RETRIES	Enter	User enters specific number of deadlock retries.
Ok	Click	Executes configuration process.
Cancel	Click	Aborts configuration process.
Print	Click	Prints configuration parameters.

#### **4.1.5.2.1.6 ECSAssist Subsystem Manager's Apply Registry Data Patch Screen**

Clicking “Apply Registry Data Patch” under the Tools menu option is the registry patch screen, shown in Figure 4.1.5-9. This screen allows users to apply updates to the registry database.



**Figure 4.1.5-9. Subsystem Manager Apply Registry Data Patch Screen**

Table 4.1.5-10 describes the control and information fields on the Apply Registry Data Patch screen.

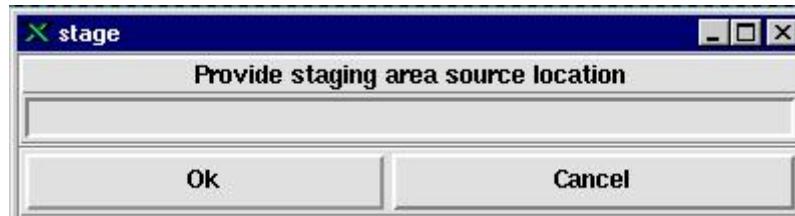
**Table 4.1.5-10. ECSAssist Subsystem Manager's Apply Registry Data Patch Field Descriptions**

Option/Field	Action	Description
Apply Registry Data Patch	Display Only	Window title.
Registry Data Server	Entry	Database Server (e.g., t1icg01_srvr).
Registry DBO Id	Entry	Database Owner ID (e.g., css_role).
Registry Password	Entry	Database Password.
Registry DB Name	Entry	Database Name (e.g., EcCsRegistry). Press Enter to fill available Attribute Trees into Tree to Patch Combo box.
Tree to Patch	Entry/Combo box	Enter Attribute Tree name or click the arrow to select Attribute Tree of choice from list.
Patch File	Entry	Enter registry patch file, which is to be used to apply updates to the registry database.
Ok	Button	To apply updates.
Cancel	Button	Abort process.
Select Patch File	Button	Use to locate registry patch file.
Help	Button	Displays extra information related to application of patch files.

#### **4.1.5.2.1.7 ECSAssist Subsystem Manager's Stage Area Installation Screen**

The stage install screen is used to input the staging location where the delivered software is stored. From the ECSAssist Subsystem Manager screen, click the Stage Area Installation button to initiate the viewlog process.

Figure 4.1.5-10 below presents the stage install screen.



**Figure 4.1.5-10. Subsystem Manager Stage Area Installation Screen**

Table 4.1.5-11 describes the control and information fields on the Stage Area Installation window.

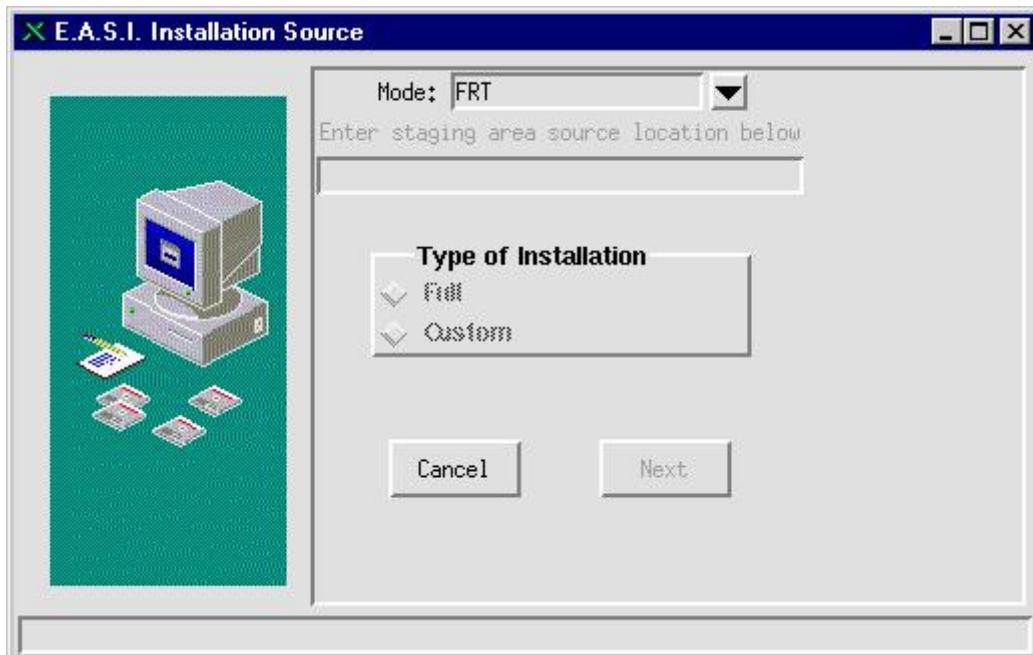
**Table 4.1.5-11. ECSAssist Subsystem Manager Stage Area Installation Field Descriptions**

Option/Field	Action	Description
Provide staging area source location	Display Only	Label for input field immediately below.
Input field	Input	Type in the staging area filename.
Ok	Click	Accepts the user's entry.
Cancel	Click	Aborts the process.

#### **4.1.5.2.2 ECSAssist System Installer (E.A.S.I.)**

E.A.S.I facilitates a complete or partial installation of ECS software, creation of configuration files, and execution of database operations by a single user who is familiar with the proper installation instructions.

Figure 4.1.5-11 shows the E.A.S.I. Installation Source window, which comes up as a result of hitting the “E.A.S.I.” button on the ECSAssist main screen (See Figure 4.1.5-1).



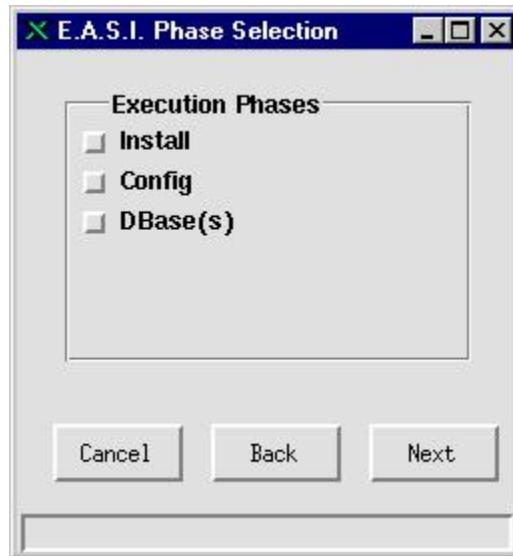
**Figure 4.1.5-11. E.A.S.I. Installation Source Window**

Table 4.1.5-12 describes information and control fields on this window.

**Table 4.1.5-12. ECSAssist E.A.S.I. Installation Source Field Descriptions**

Option/Field	Action	Description
Mode (combo box)	Click	To view a list of available modes. User can select only one mode.
Enter staging area source location below	Display Only	Staging area source location field identifier.
Staging area source location entry	Enter if available	Staging area source location entry becomes available when a ClearCase view is not available. Enter the staging area source location without the architecture and with the word "TOOLKIT" (e.g., /net/tacoma/dist/DROP50).
Type of installation	Display Only	Identifies the installation options.
Full	Click	Facilitates a complete installation of ECS custom software.
Custom	Click	Allows the user to facilitate a customized installation (e.g., The user may only want to install on three hosts or may only want to install Subsystem DSS on all hosts).
Cancel	Click	Returns the user to ECSAssist main menu.
Next	Click	When enabled, allows the user to proceed to the next window.

Figure 4.1.5-12 is the E.A.S.I. Phase Selection window. The user can select any phase to execute. Associated phase windows are displayed depending on what phases are selected.



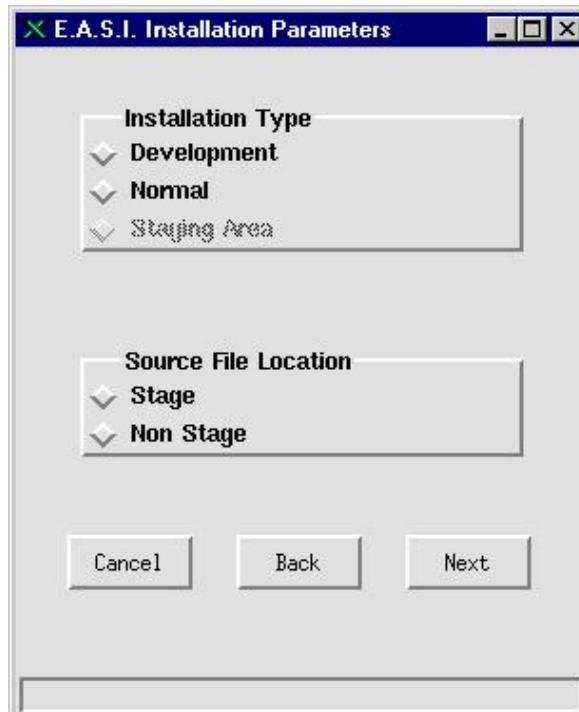
**Figure 4.1.5-12. E.A.S.I. Phase Selection Window**

Table 4.1.5-13 describes the control and information fields on the E.A.S.I. Phase Selection window.

**Table 4.1.5-13. ECSAssist E.A.S.I Phase Selection Window Field Descriptions**

Option/Field	Action	Description
Execution Phases	Display Only	Identifies the option buttons for selecting the phase of installation.
Install	Click on/off	Selects installation of ECS custom software.
Config	Click on/off	Selects the creation CFG and PCFG files.
Dbase(s)	Click on/off	Selects the execution of selected database operations.
Cancel	Click	Returns the user to the ECSAssist main menu.
Back	Click	Returns the user to the previously selected window.
Next	Click	Allows the user to proceed to the next window.

Figure 4.1.5-13 is the E.A.S.I. Installation Parameters window. It allows the user to select Installation criteria. If a ClearCase task is not set or not available, the Installation Type defaults to the Staging Area option.



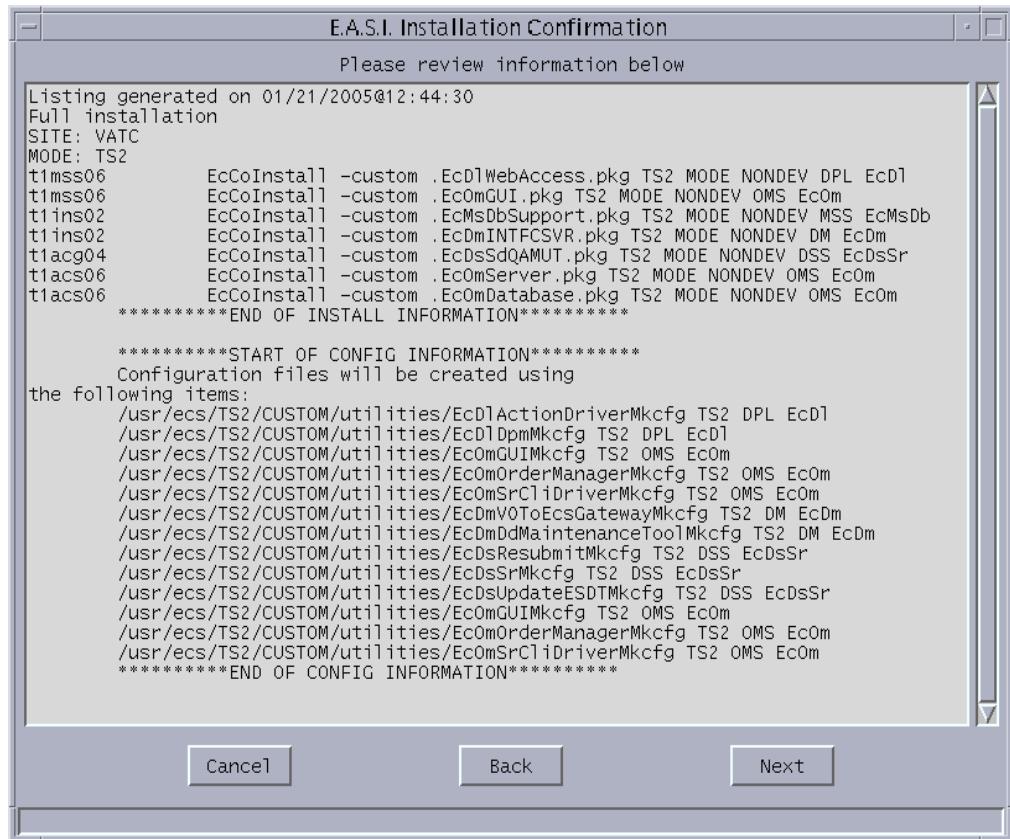
**Figure 4.1.5-13. E.A.S.I. Installation Parameters Window**

Table 4.1.5-14 describes the control and information fields in the E.A.S.I. Installation Parameters window.

**Table 4.1.5-14. ECSAssist E.A.S.I Installation Parameters Window Field Descriptions**

Option/Field	Action	Description
Installation Type	Display Only	Identifies the three installation type options.
Development	Click	Creates symbolic links to ClearCase.
Normal	Click	Copies binaries and libraries to the selected mode.
Staging Area	Click	Installs the mode from the staging location.
Source File Location	Display Only	Identifies the two options for selecting source files.
Stage	Click	To obtain files from the nightly build.
Non Stage	Click	Allows testing of changes before merging to a branch.
Cancel	Click	Returns the user to the ECSAssist main menu.
Back	Click	Returns the user to the previously selected window.
Next	Click	Allows the user to proceed to the next window.

Figure 4.1.5-14 is the E.A.S.I Installation Confirmation window. If there is an incorrectly selected item, click the “Back” button until you have reached the window requiring the change and make the change. When the change is made, click the “Next” button until you have reached the “Installation Confirmation” window.



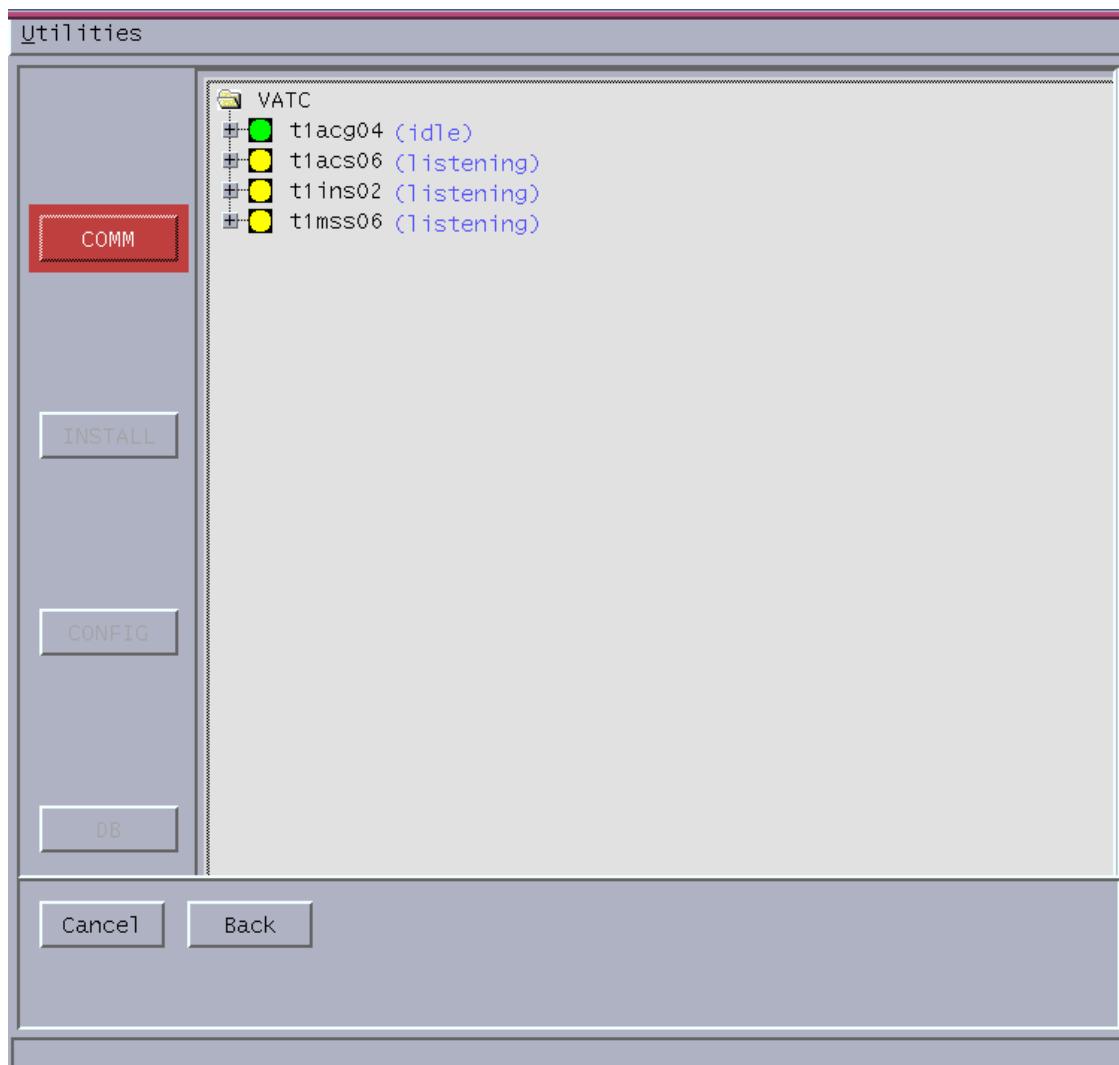
**Figure 4.1.5-14. E.A.S.I Installation Confirmation Window**

Table 4.1.5-15 describes the control and information fields in the E.A.S.I. Installation Confirmation window.

**Table 4.1.5-15. ECSAssist E.A.S.I. Installation Confirmation Window Field Descriptions**

Option/Field	Action	Description
Please review information below	Display Only	Requests the user to review the information immediately below in a scrollable text box.
Information in Text Box	Read Only	Contains a log of the installation.
Cancel	Click	Returns the user to the ECSAssist main menu.
Back	Click	Returns the user to the previously selected window.
Next	Click	Allows the user to proceed to the next window.

Figure 4.1.5-15 displays the E.A.S.I STATUS window.



**Figure 4.1.5-15. E.A.S.I. STATUS Window**

Table 4.1.5-16 describes the control and information fields in the E.A.S.I. STATUS window.

**Table 4.1.5-16. ECSAssist E.A.S.I. STATUS Window Field Descriptions**

Option/Field	Action	Description
Utilities	Menu	--
Close all open sockets	Click	Closes all the opened connections. Waits for 4 minutes and resets communication and selected phases to “waiting.” This allows users to re-run selected phases.
Max Requests	Click	Controls the number of server calls over the network.
Client To Server Connect Time	Selection	Used to determine the amount of time needed for server to connect to clients. If network is slow increase time to connect.
Reset Installation phase	Click	Allows operator to install again which avoids restarting ECS Assist. Once the “Reset Installation phase” option has been clicked the operator can click the “Install” button and the Installation process will commence.
Expand all nodes	Click	Allows operator to expand all nodes in EASI status window.
Close all expanded nodes	Click	Allows operator to close all expanded nodes in EASI status window.
COMM (Button)	Click	Initiates the communication phase. Starts the servers on selected hosts.
INSTALL (Button)	Click	Initiates installation of the ECS custom software.
CONFIG (Button)	Click	Initiates the creation of CFG and PCFG files.
DB (Button)	Click	Invokes the DataBase Viewer. Requires Database login to view inserted granules.
Cancel	Click	Returns user to the ECSAssist main menu. All connections to the server are terminated.
Back	Click	Returns the user to the previously selected window.

### 4.1.5.3 Required Operating Environment

For information on the operating environment, tunable parameters and environment variables of ECSAssist refer to the 910-TDA-022 “Custom Code Configuration Parameters” documentation series.

#### 4.1.5.3.1 Interfaces and Data Types

None.

#### **4.1.5.4 Databases**

No database is associated with or used by the ECSAssist. ECSAssist can create configuration files for software components, remove outdated log files, or update other files related to the functions performed.

#### **4.1.5.5 Special Constraints**

None.

#### **4.1.5.6 Outputs**

Output from the ECSAssist tool consists of the data displayed on the GUIs described in Section 4.1.5.2.1 and error and event messages described in Section 4.1.5.7.

#### **4.1.5.7 Event and Error Messages**

Event and Error Messages for ECSAssist are listed in Appendix A. All outputs associated with the ECSAssist are captured in a file called “/tmp/<userid>.ecs\_session.log”.

#### **4.1.5.8 Reports**

None.

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#### **4.1.6 ECS Registry GUI**

The ECS Registry GUI is a management tool for ECS applications. The GUI interface allows users to create and update parameter information. Registry data is warehoused in a registry database. The ECS Registry GUI is used to perform the operator functions listed in Table 4.1.6-1.

**Table 4.1.6-1. Common ECS Operator Functions Done Using the Registry GUI**

<b>Operator Function</b>	<b>Description</b>	<b>When and Why to Use</b>
Copy	Copy selected item and store contents into a buffer.	Useful when new parameters are similar to existing parameters.
Move	Move selected item.	When a node is in the wrong location.
Paste	Pastes contents of buffer.	After a node of choice has been selected.
Map	Associate an attribute tree to a mode.	Attribute trees contain configuration specific data. Attribute trees can be mapped, with an explanation, to a mode, which corresponds to a specific task.
Add	Add a new node to an attribute tree.	Add a node to represent the configuration specific data.
Delete	Deletes a node.	When a node is no longer necessary.
Rename	Renames a node.	A software change can require a name change to a node.
Attribute History	Displays historical data for the selected attribute.	When the "Attribute Information" window is displayed, an operator can view attribute historical data. There may be a problem starting an application's server due to an incorrect value (i.e., DebugLevel = 7). The operator can review changes made using the "Attribute history window". Refer to Table 4.1.6-12 "Attribute Information" for more information.

##### **4.1.6.1 Quick Start Using the ECS Registry GUI**

The Registry GUI is invoked through Unix commands as follows:

**>setenv DISPLAY <current\_host IP>:0.0**

**>EcCsRgRegistryGUIStart <mode>**

where:

**<current\_host IP>** is the IP address of the host on which to run the GUI

**<mode>** is the mode to which the configuration parameters apply (e.g., OPS, TS1, or TS2)

#### 4.1.6.2 User Interface Name Main Screen

Before displaying the ECS Registry main screen, the user must login to the ECS Registry Database. The login window is shown in Figure 4.1.6-1.



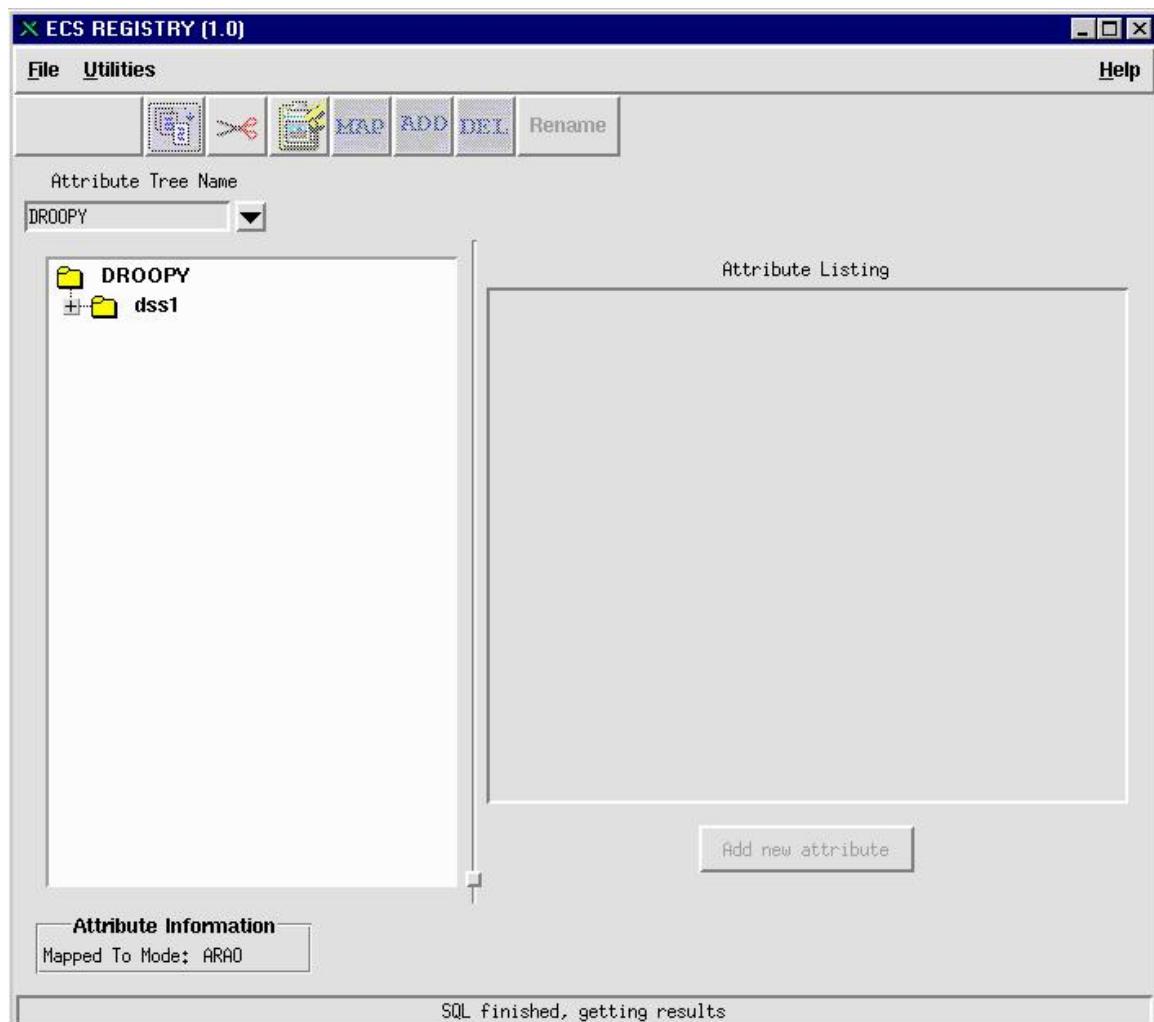
**Figure 4.1.6-1. Registry GUI Database Login Window**

Table 4.1.6-2 describes the various information, control, and data fields in the login window.

**Table 4.1.6-2. Registry GUI Database Login Fields**

Option/Field Name	Data Type	Size	Description
"Database Login"	Display Only	-	Window title.
User Id	Text	-	User ID (Automatically filled).
Password	Text	-	Enter Password.
Server	Text	-	Enter Configuration Registry Database server name.
DB Name	Text	-	Name of database.
"Sign On"	Button	-	Logs onto the Registry Database.
"Exit"	Button	-	Cancels the login transaction.

On successful login, the ECS Registry Main Screen, as shown in Figure 4.1.6-2, appears. On this screen there is an attribute tree named "DROOPY," displaying one host node called "dss1." Attribute tree "DROOPY" is mapped to mode ARAO. All attribute trees are *root* nodes. Attribute information displays mapped modes.



**Figure 4.1.6-2. ECS Registry Main Window**

Table 4.1.6-3 describes the informational, control, and data entry fields of the Registry main window.

**Table 4.1.6-3. Information, Control and Data Entry Fields on the ECS Registry GUI Main Window**

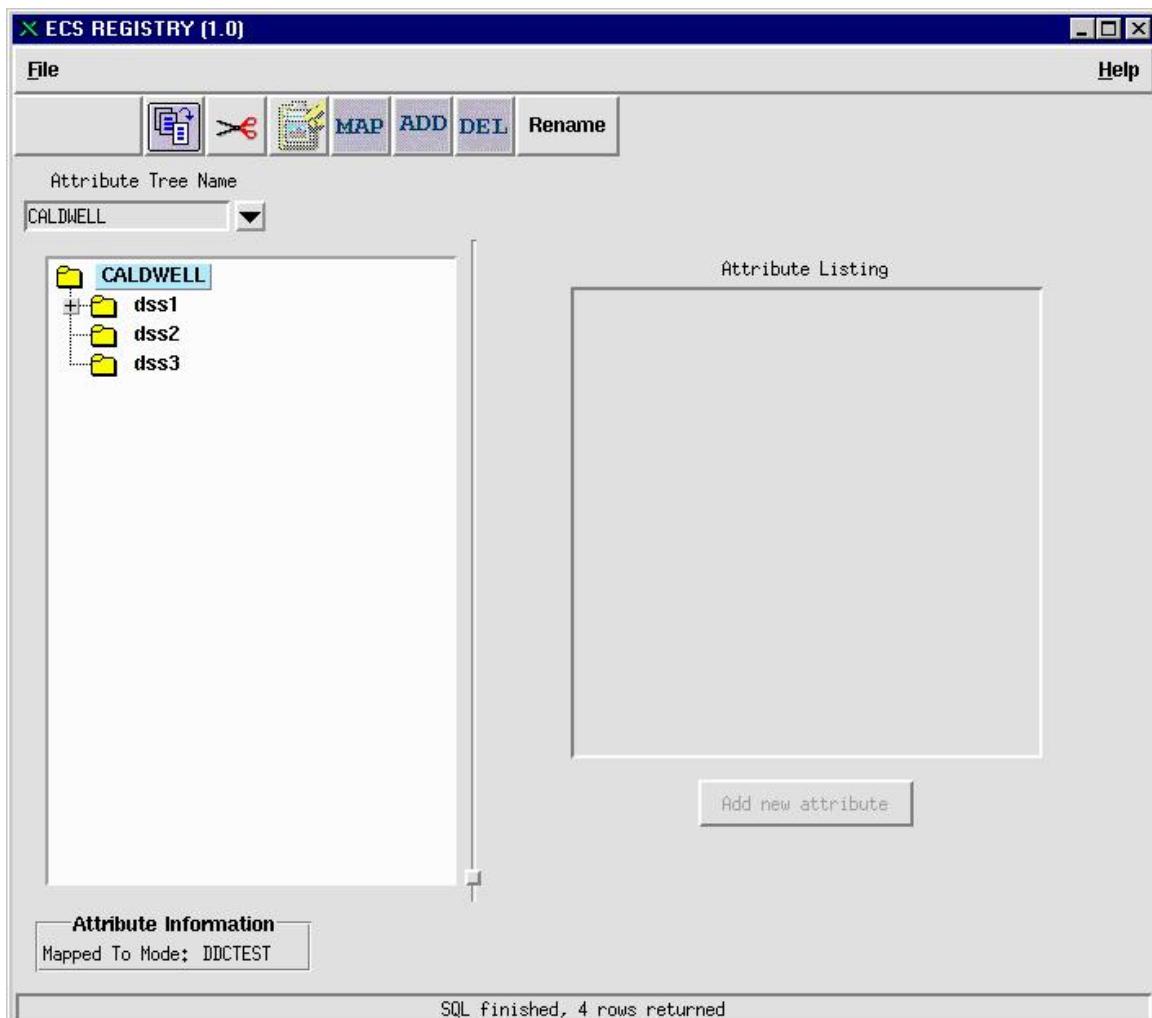
Field Name	Data Type	Size	Description
Attribute Tree Name	Click down arrow.	-	Displays a list of defined attribute trees.
Copy	Button	-	Copy the selected item and store contents into a buffer. See Section 4.1.6.2.3
Attribute Information	Label	-	Displays the currently mapped mode.
Add new attribute	Button	-	Adds a new attribute. Enabled when a node is selected.
Move	Button	-	Move the selected item. See Section 4.1.6.2.4
Paste	Button	-	Pastes contents of the paste buffer. See Section 4.1.6.2.4 for an example.
MAP	Button	-	Associate an attribute tree to a mode. See Section 4.1.6.2.2
ADD	Button	-	Add a new node to an attribute tree. See Section 4.1.6.2.1
DEL	Button	-	Deletes a node. See Section 4.1.6.2.6
Rename	Button	-	Renames a node. See Section 4.1.6.2.5
Status line	Text	-	Displays status messages.

The following menu bar options are available on the ECS Registry main window:

- **File** – provides the following options
  - **Exit** – terminates the GUI
- **Utilities** – provides the following options
  - **Clear log file contents** – Clears the log file
- **Help** – provides user help information

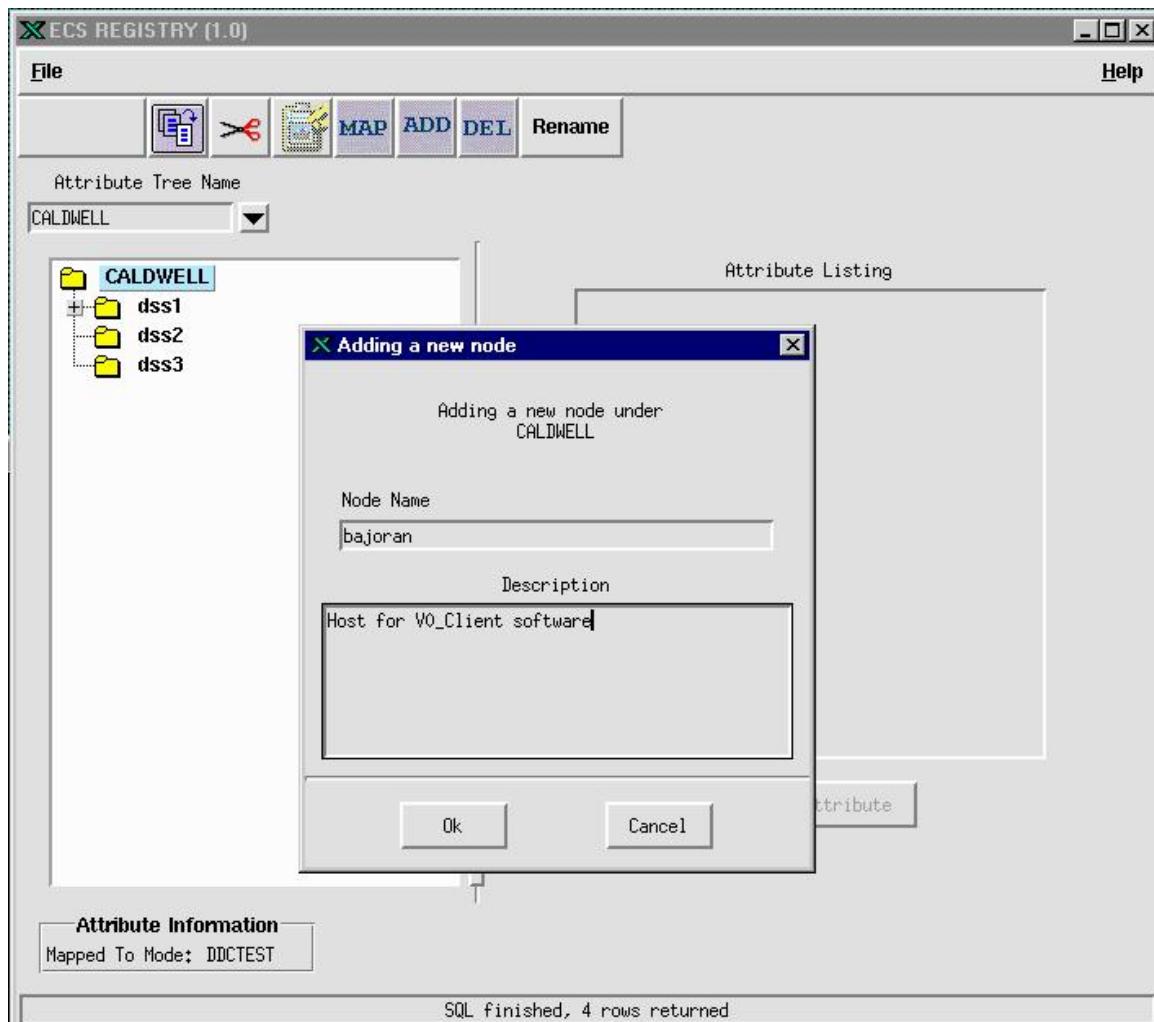
#### 4.1.6.2.1 Adding a New Node

Figure 4.1.6-3 represents Step 1 in adding a new node to an attribute tree. Select the *root* node, which is always the attribute tree name, from the hierarchy list. Selecting any node from the hierarchy list enables the toolbar.



**Figure 4.1.6-3. Adding a New Node Window**

Clicking the “ADD” button from the toolbar displays the “Adding a new node dialog” as represented in Figure 4.1.6-4.



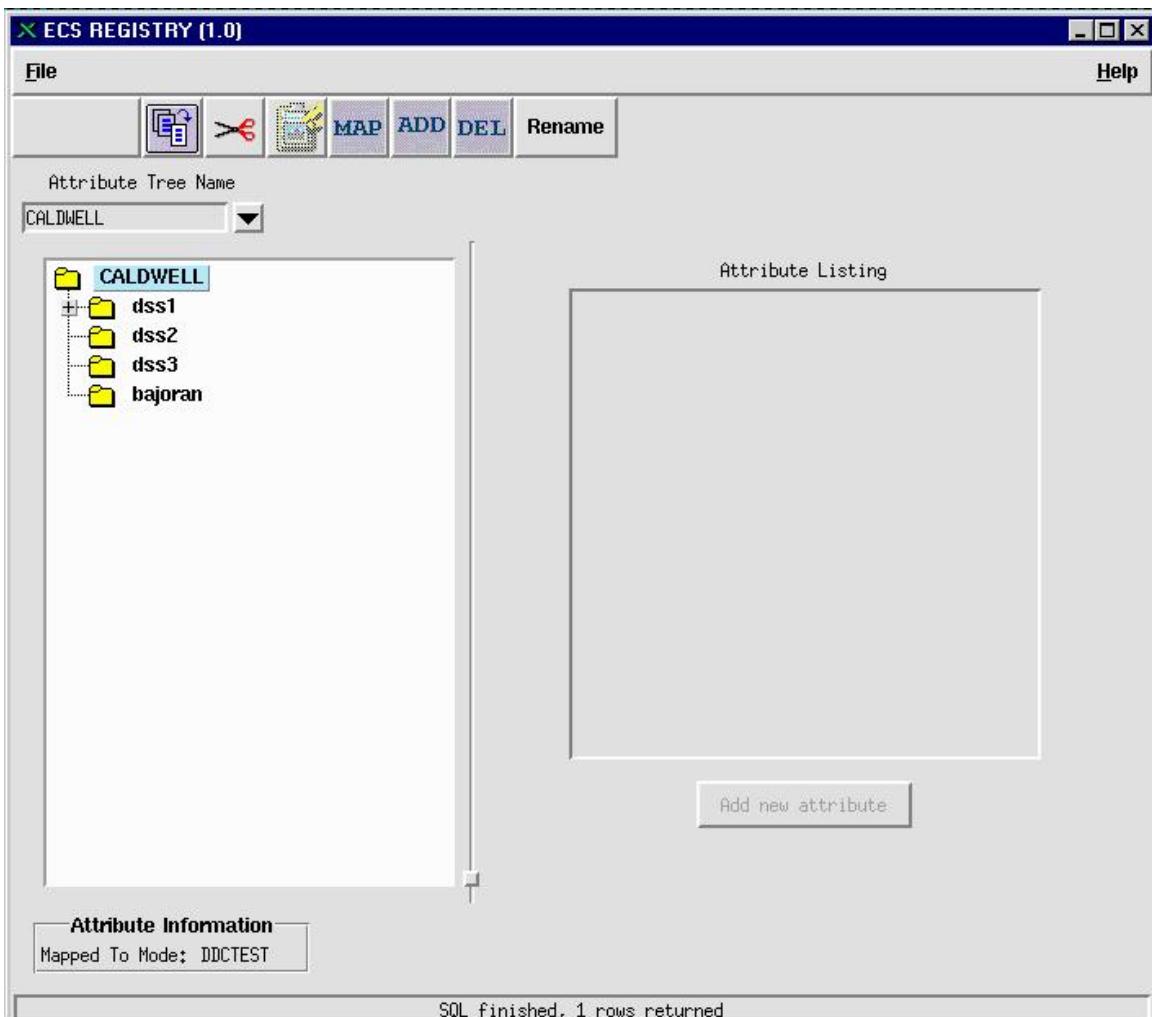
**Figure 4.1.6-4. Adding a New Node Dialog Window**

Table 4.1.6-4 describes the various fields in the Adding a New Node window.

**Table 4.1.6-4. Adding a New Node Field Descriptions**

Field Name	Data Type	Size	Description
"Adding a new node"	Display only	-	Window title
Node Name	Text	-	Node Name
Node Description	Text	-	Node Description
"Ok"	Button	-	Accepts the ADD
"Cancel"	Button	-	Cancels the ADD

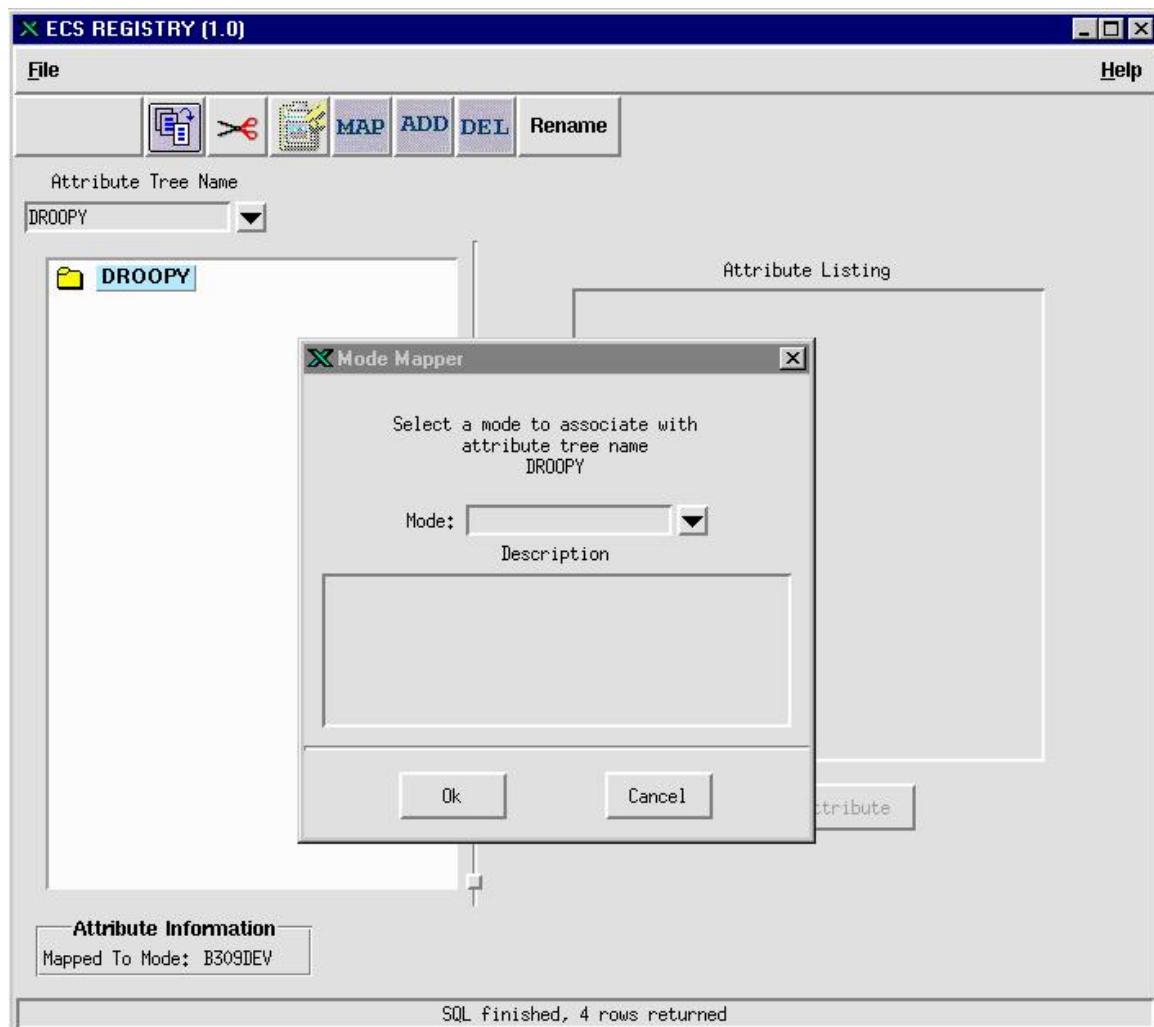
Figure 4.1.6-5 shows the final results of adding a new node.



**Figure 4.1.6-5. Results of Adding a New Node**

#### 4.1.6.2.2 Mapping a Mode to an Attribute Tree

Figure 4.1.6-6 represents step 1 when mapping a mode to an attribute tree.



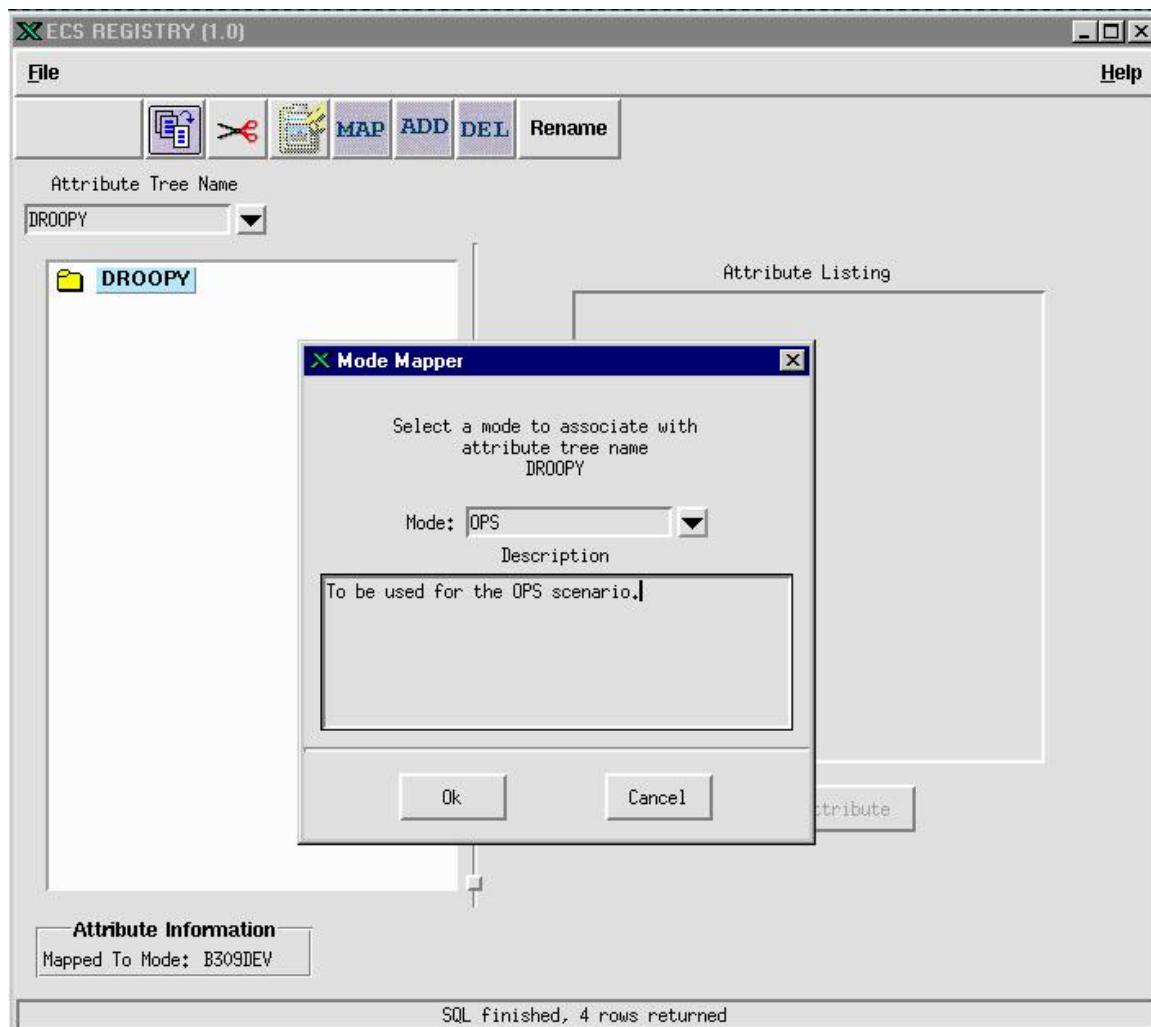
**Figure 4.1.6-6. Mode Mapper Window**

Table 4.1.6-5 describes the fields in the Mode Mapper window.

**Table 4.1.6-5. Map a Mode to an Attribute Tree**

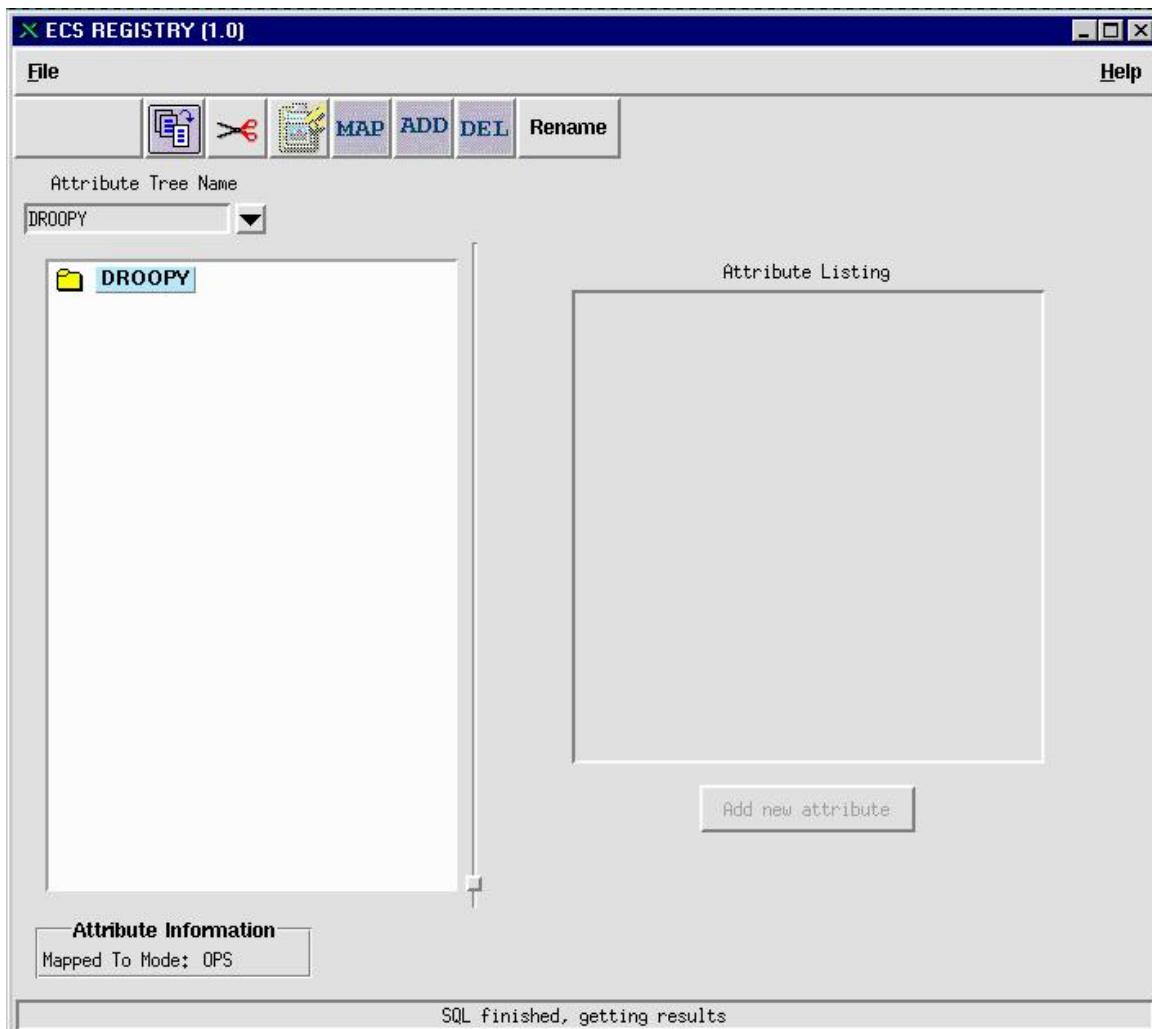
Field Name	Data Type	Size	Description
"Mode Mapper"	Display Only	-	Window title.
Mode	Text	-	Mode selection using a combo box.
Mode Description	Text	-	Mode Description.
"Ok"	Button	-	Accepts the mode selection.
"Cancel"	Button	-	Cancels the mode mapping operation.

To associate a mode with the selected attribute tree, click the “MAP” button from the toolbar; the “Mode Mapper” dialog is displayed as represented in Figure 4.1.6-7. It indicates that mode “OPS” has been selected and a description has been entered.



**Figure 4.1.6-7. Results of Mode Mapping**

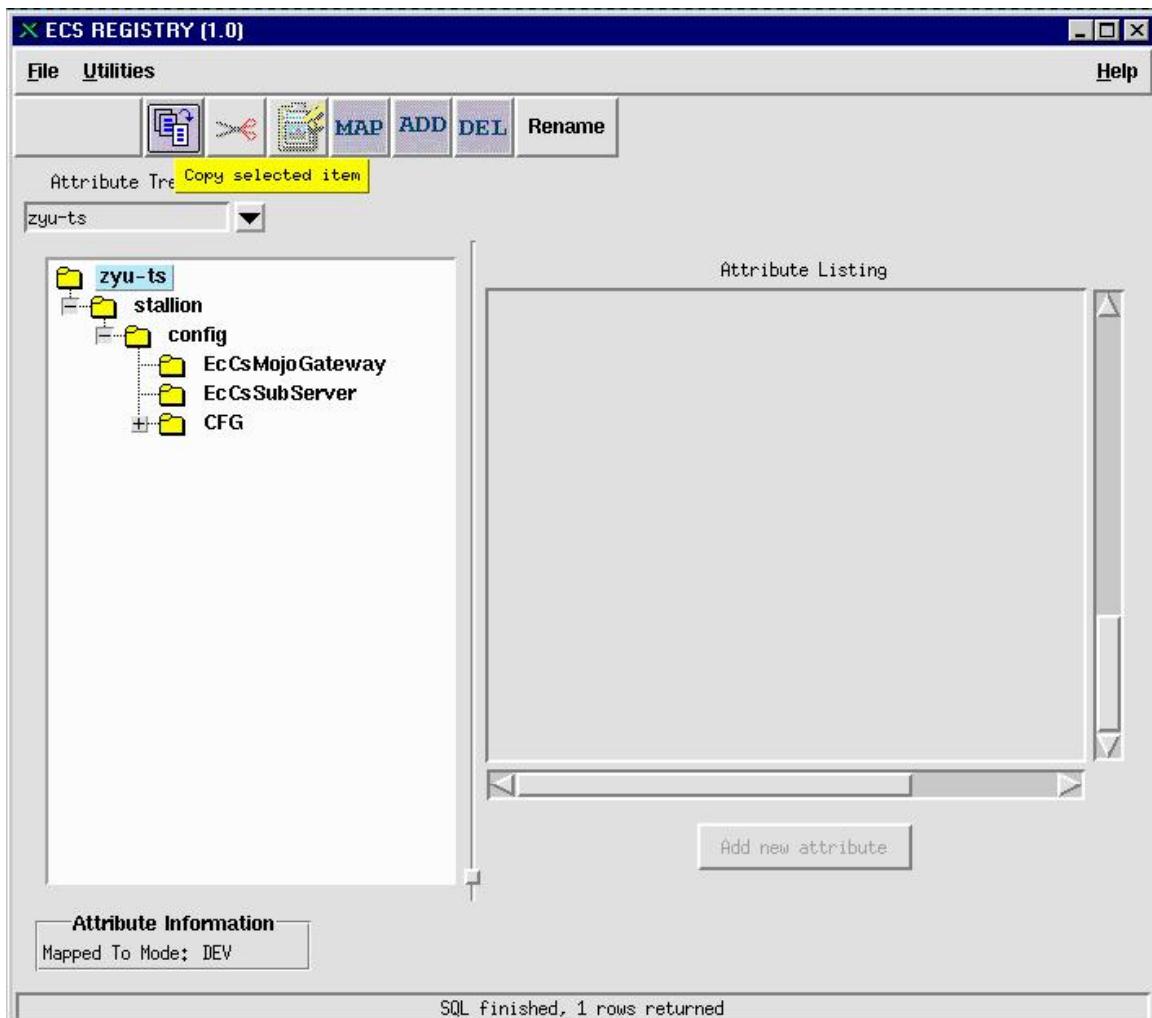
Figure 4.1.6-8 represents the final result of associating a mode with an attribute tree. In the attribute information box, the mode “OPS” is mapped to attribute tree “DROOPY.”



**Figure 4.1.6-8. Final Result of Mode Mapping Transaction**

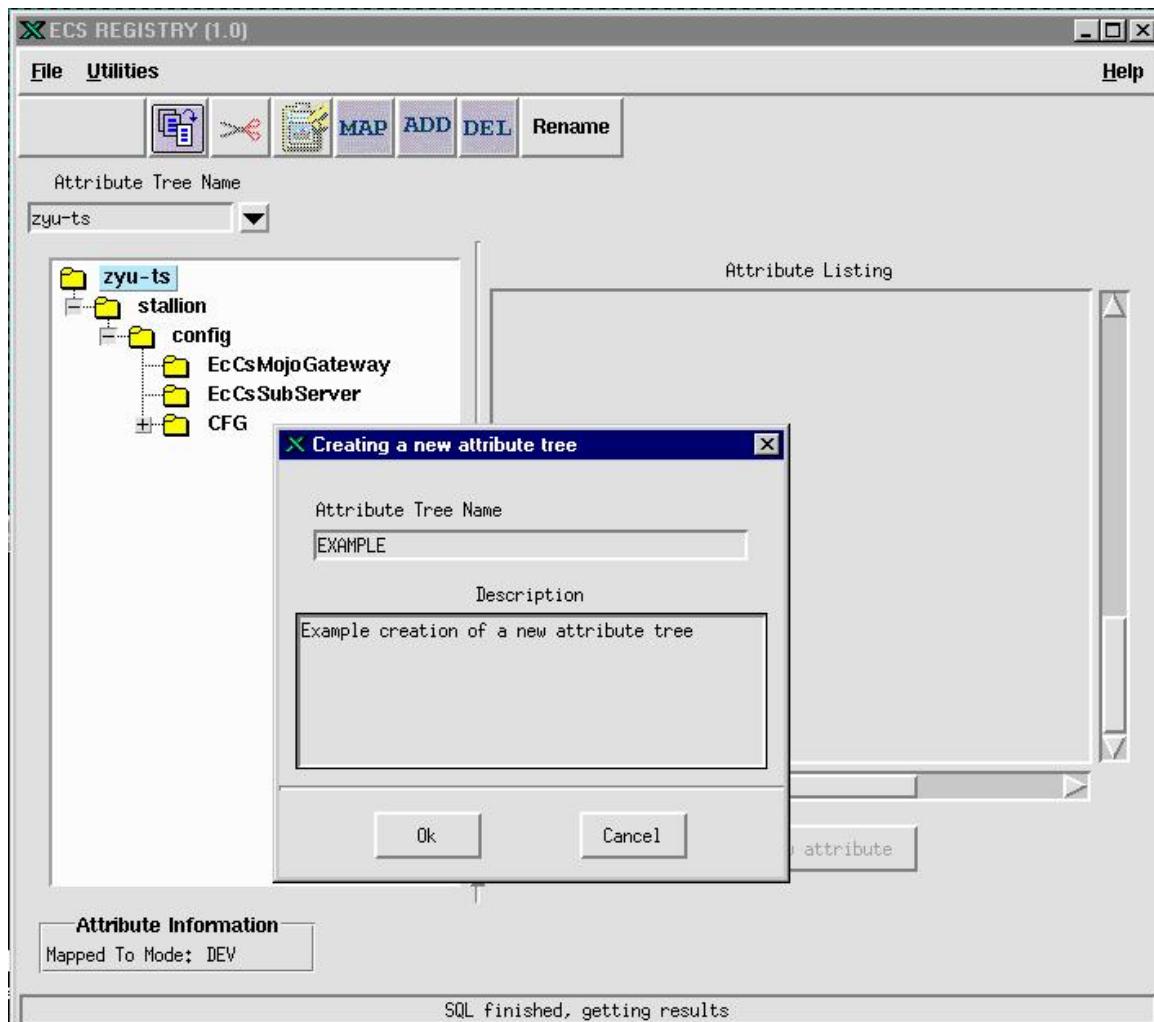
#### 4.1.6.2.3 Creating a New Attribute Tree by Copy

Figure 4.1.6-9 shows that an attribute tree has been selected and the user has highlighted the Copy button from the toolbar.



**Figure 4.1.6-9. Creating a New Attribute Tree Using the Copy Button**

Click the Copy button to facilitate the creation of a new attribute tree as represented by Figure 4.1.6-10.



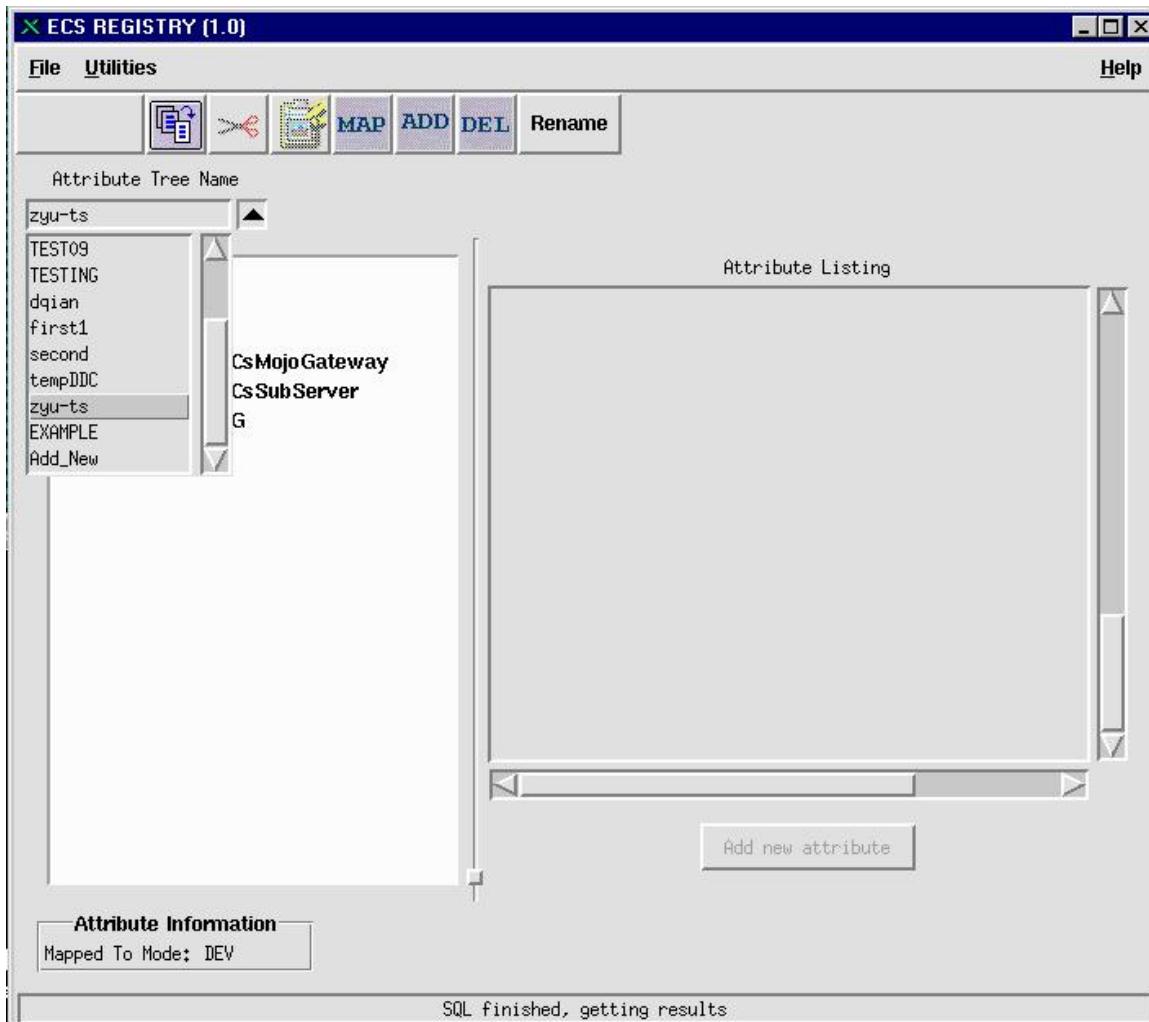
**Figure 4.1.6-10. Creating a New Attribute Tree Window**

Table 4.1.6-6 identifies the fields in the “Creating a new attribute tree” window.

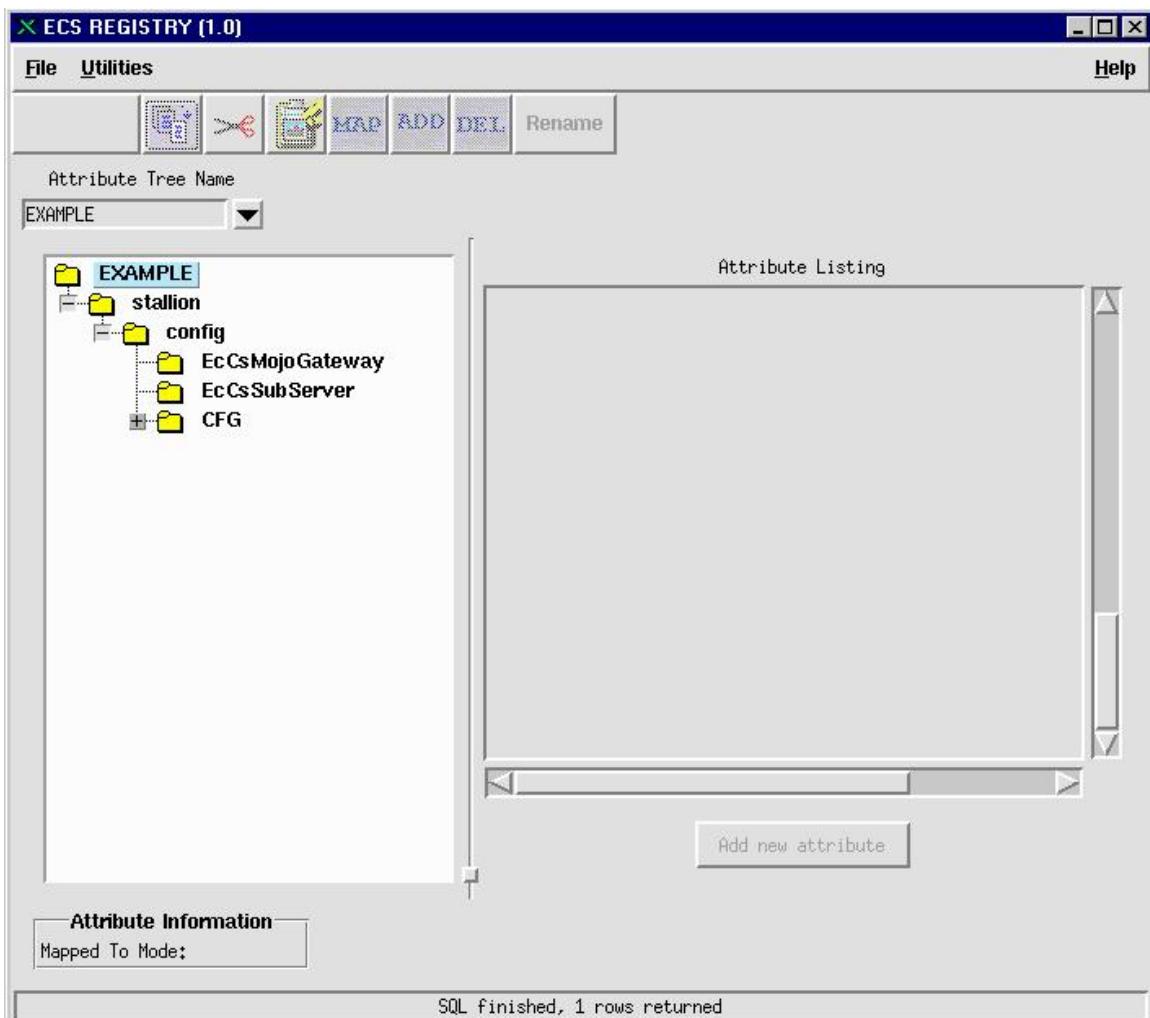
**Table 4.1.6-6. Creating a New Attribute Tree by Copy**

Field Name	Data Type	Size	Description
“Creating a new attribute tree”	Display Only	-	Window title
Attribute Tree Name	Text	-	Attribute Tree Name
Description	Text	-	Attribute Tree Description
“Ok”	Button	-	Accepts the Copy operation
“Cancel”	Button	-	Cancels the Copy operation

Once the new attribute tree has been created, you can verify its existence. Open the combo box as depicted in Figure 4.1.6-11 and select the new attribute tree. In this case, the new attribute is "EXAMPLE" as shown in Figure 4.1.6-12.



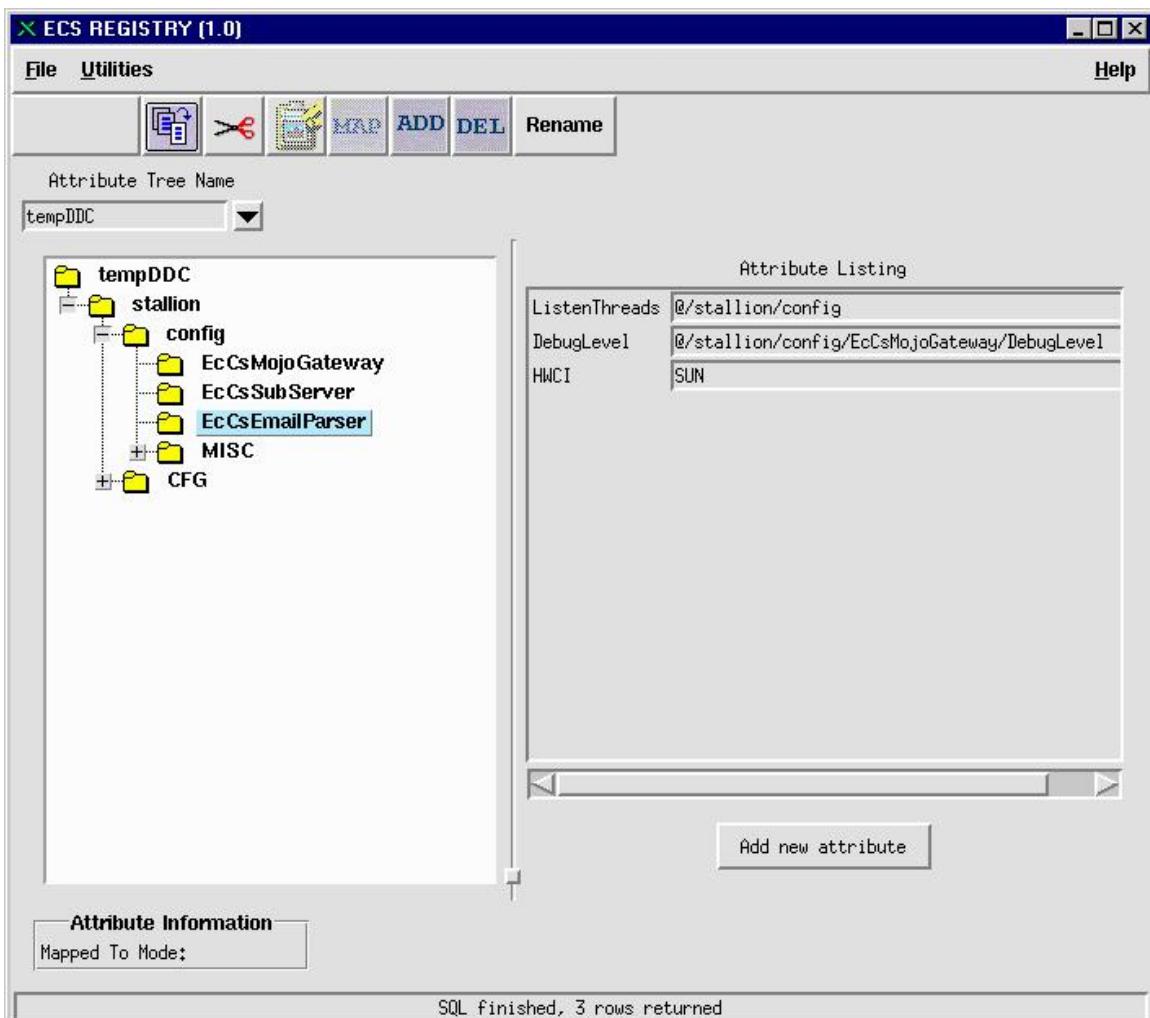
**Figure 4.1.6-11. Attribute Tree Field Combo Box List**



**Figure 4.1.6-12. Display of the New Attribute Tree**

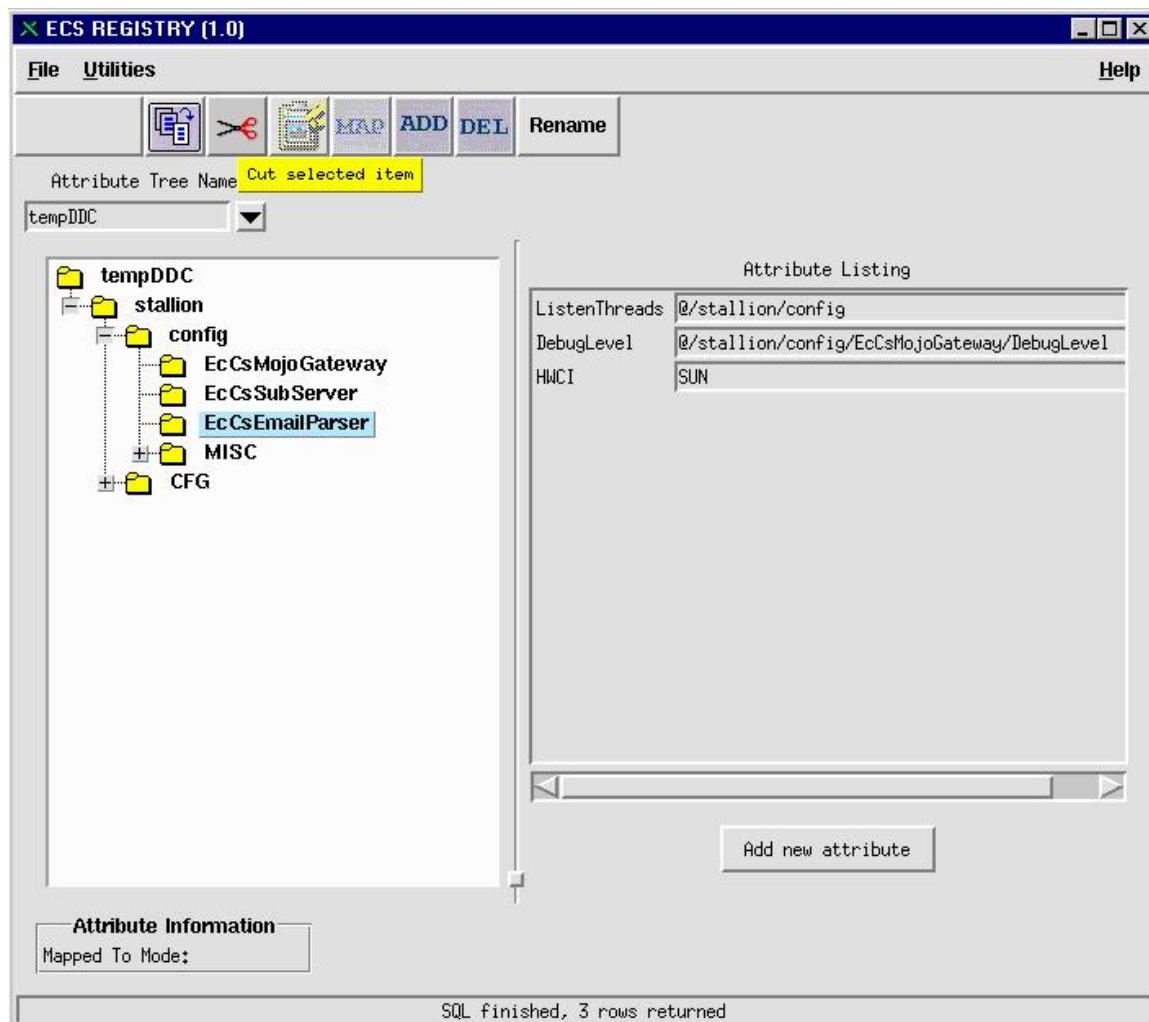
#### 4.1.6.2.4 Move Subtree Option

To move nodes within the attribute tree, select the root of the sub-tree that is to be moved. In this case, we have selected the node “*EcCsEmailParser*” within the attribute tree labeled *tempDDC* as depicted in Figure 4.1.6-13. Note that there are Attributes associated with the node *EcCsEmailParser*, which are discussed ahead.



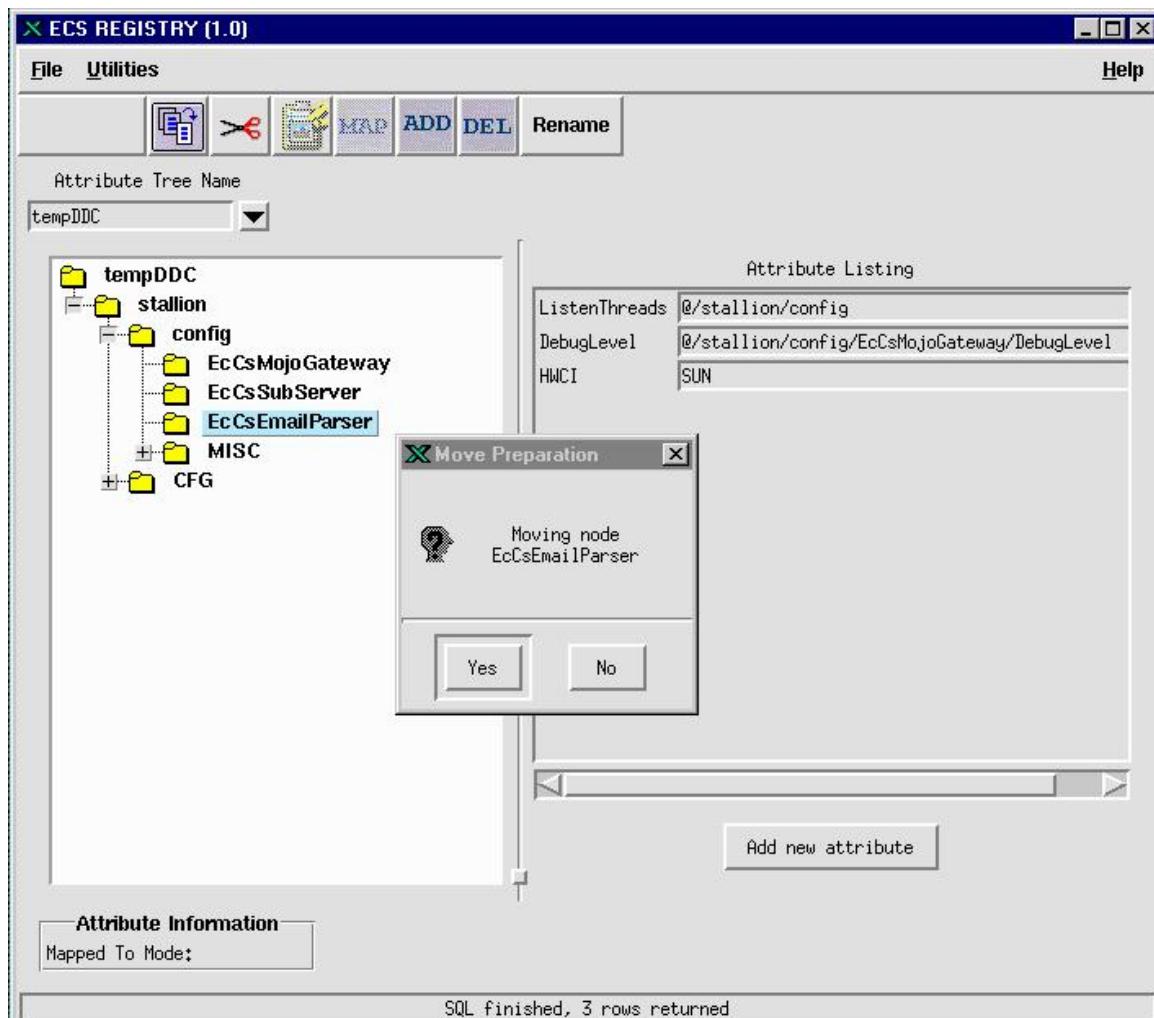
**Figure 4.1.6-13. Move Nodes Option**

In Figure 4.1.6-14, the Cut button is highlighted.



**Figure 4.1.6-14. Cut Button is Pressed**

Clicking the Cut button prepares the move operation as depicted in Figure 4.1.6-15.



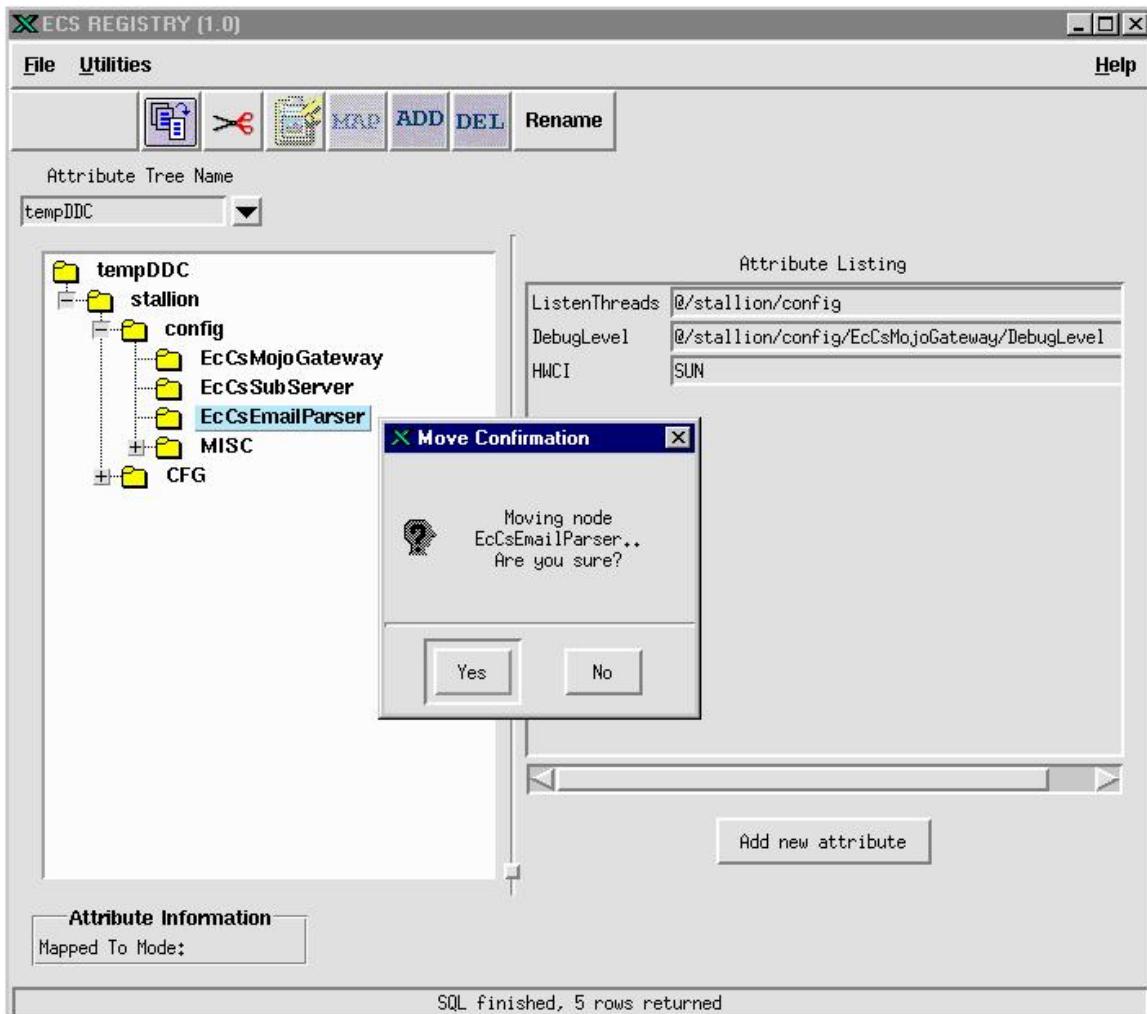
**Figure 4.1.6-15. Result of Pressing the Cut Icon in the Move Subtree Operation**

Table 4.1.6-7 describes the fields in the Move Preparation window.

**Table 4.1.6-7. Move Preparation Field Definitions**

Field Name	Data Type	Size	Description
"Move Preparation"	Display Only	-	Window title
"Yes"	Button	-	Accepts the transaction
"No"	Button	-	Cancels the transaction

Figure 4.1.6-16 represents final confirmation before the move.



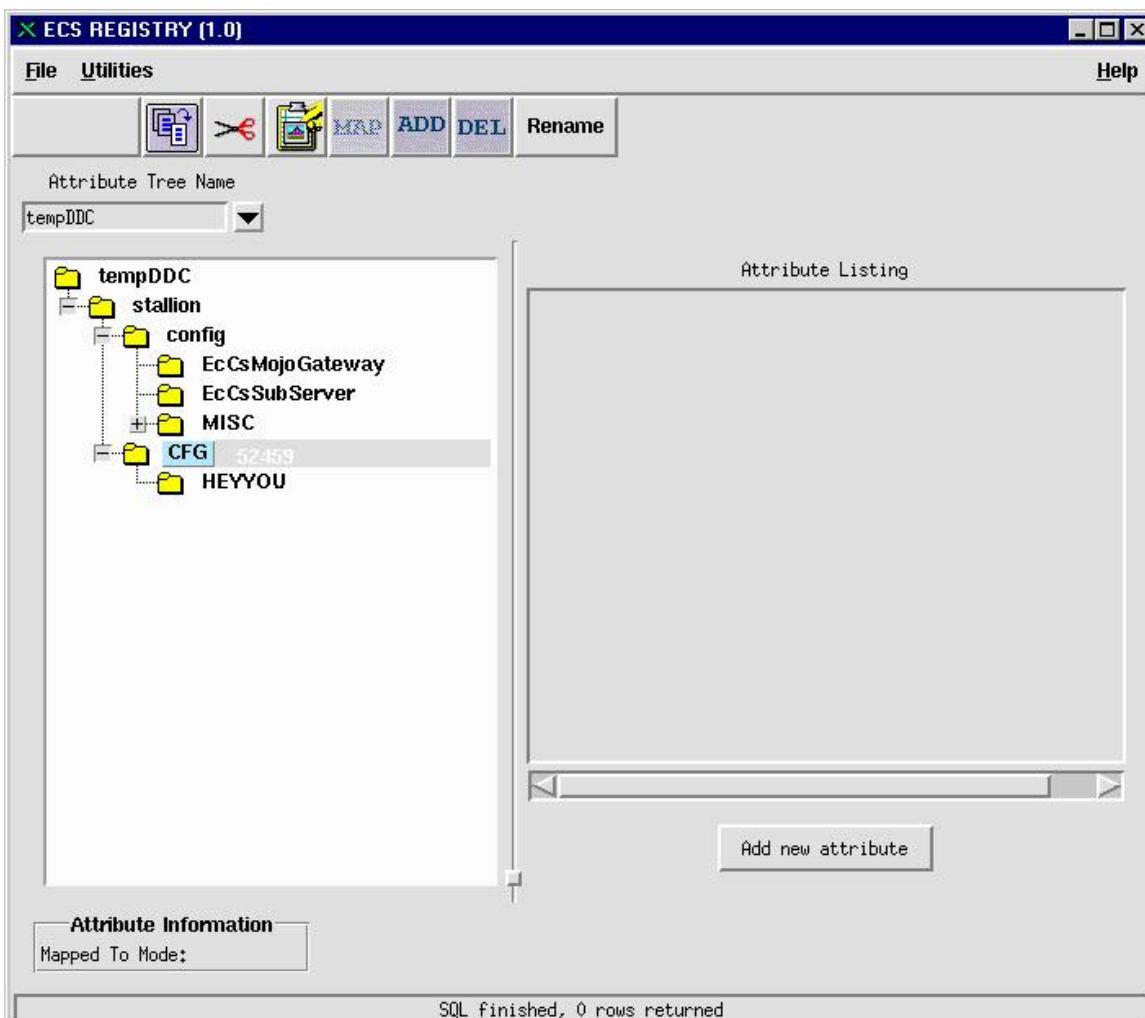
**Figure 4.1.6-16. Final Confirmation for the Move Operation**

Table 4.1.6-8 describes the field in the Move Confirmation window.

**Table 4.1.6-8. Move Confirmation Window Fields**

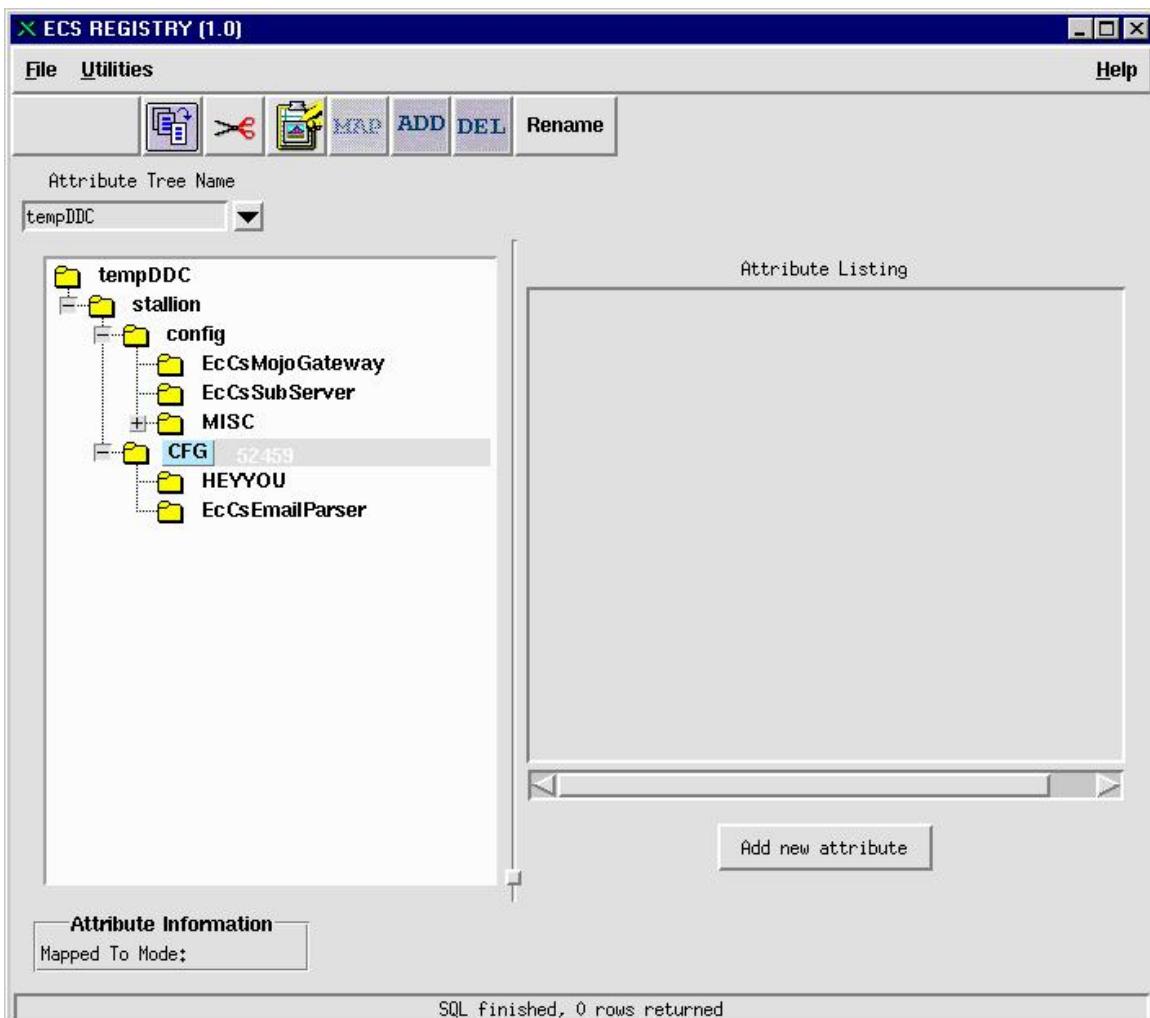
Field Name	Data Type	Size	Description
“Move Confirmation”	Display Only	-	Window title.
“Yes”	Button	-	Accepts the transaction.
“No”	Button	-	Cancels the transaction.

Select the target node for the move as depicted in Figure 4.1.6-17. In this case, the target node is “CFG.”



**Figure 4.1.6-17. Selecting the Target of the Move**

Click the Paste button to finalize the move to the target node as depicted in Figure 4.1.6-18.



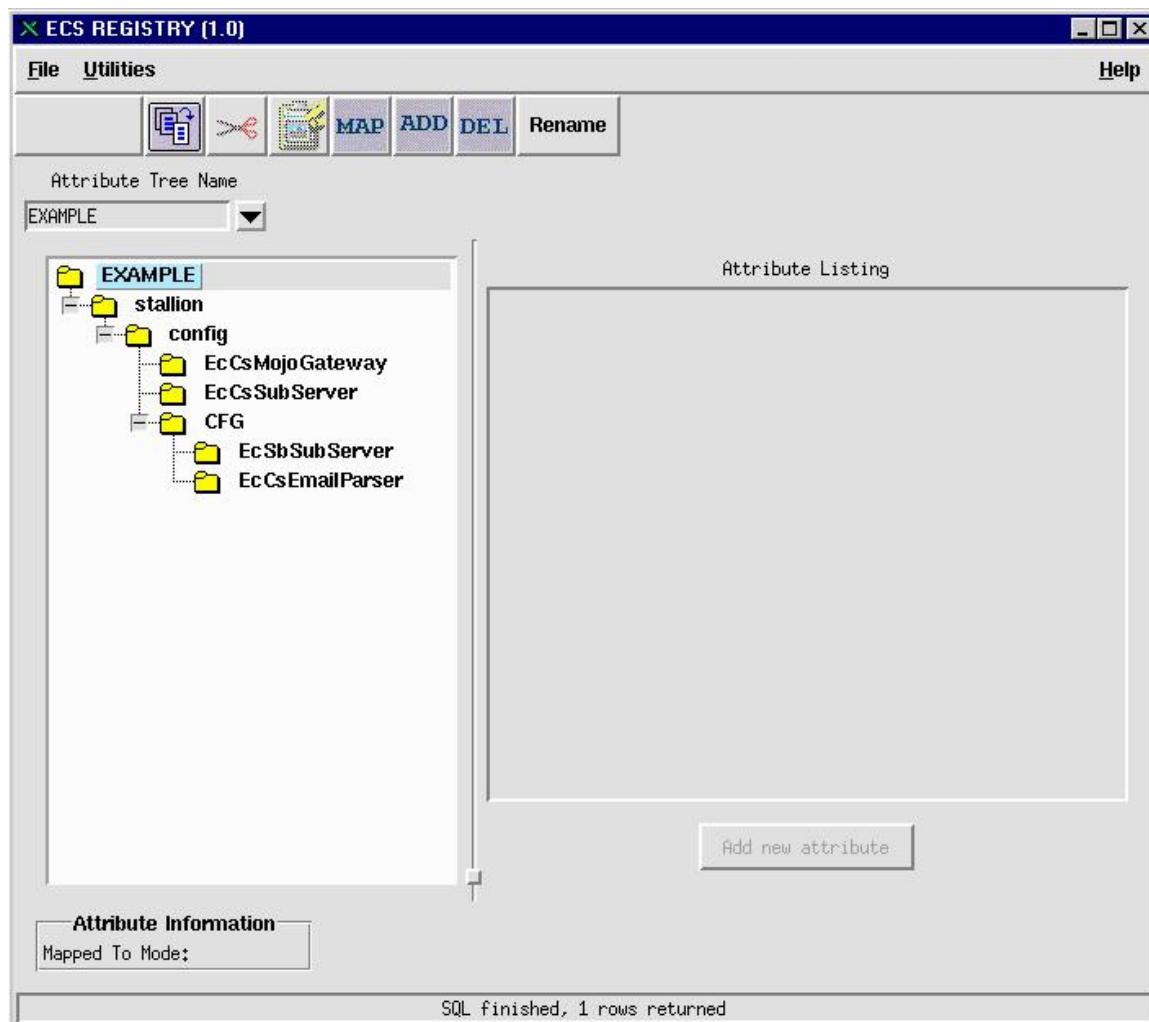
**Figure 4.1.6-18. Result of the Paste in the Move Operation**

To move a node to a node within another attribute tree:

1. Select an attribute tree of choice.
2. Select a node within the selected attribute tree.
3. Click the “Paste” button.

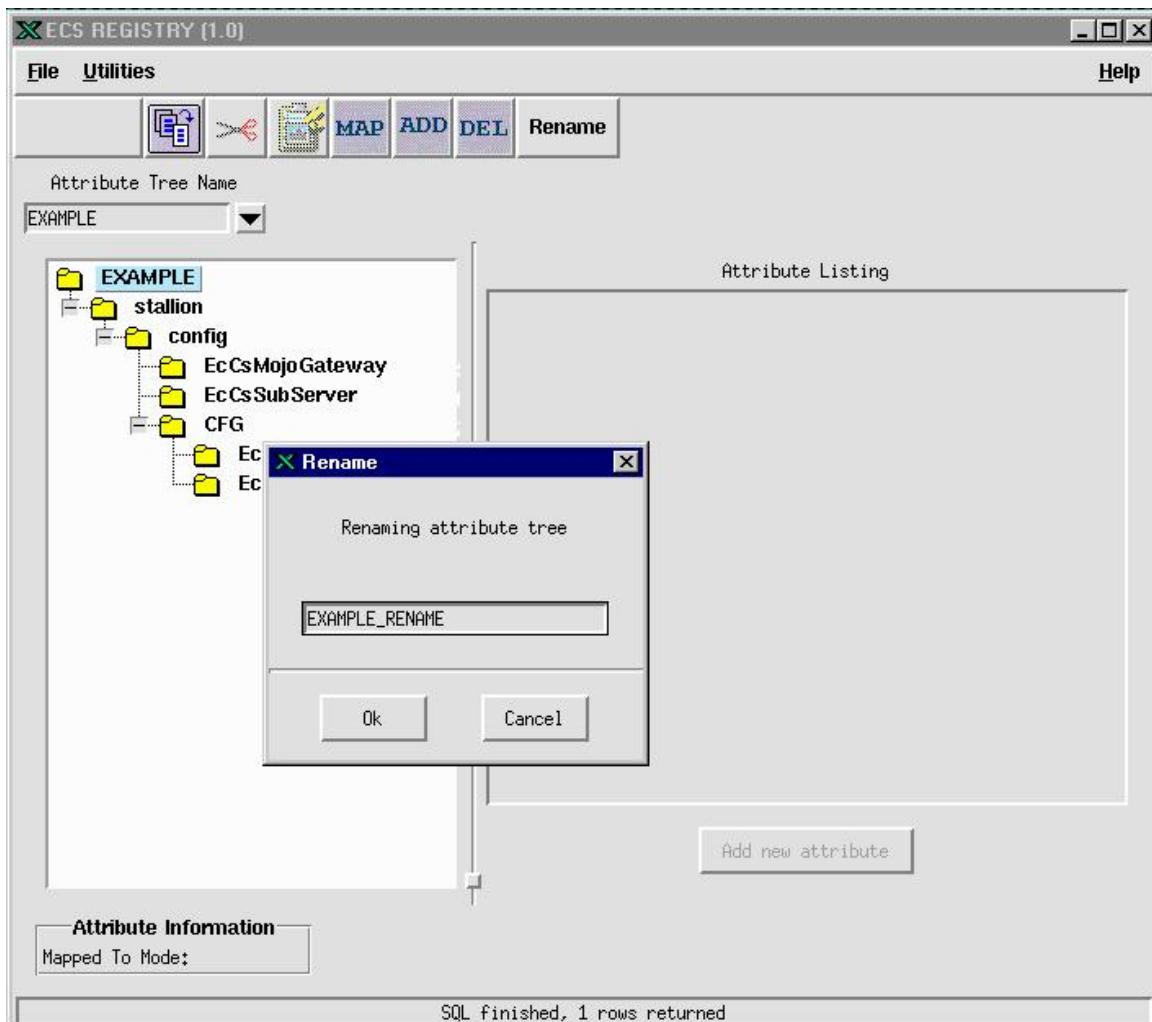
#### 4.1.6.2.5 Rename Nodes

Select the attribute tree to be renamed. In this case, the *root* node “EXAMPLE” is selected as depicted in Figure 4.1.6-19.



**Figure 4.1.6-19. Rename Operation**

Click the Rename button from the toolbar and the Rename dialog box is displayed as represented in Figure 4.1.6-20. Enter the new name and click the Ok button.



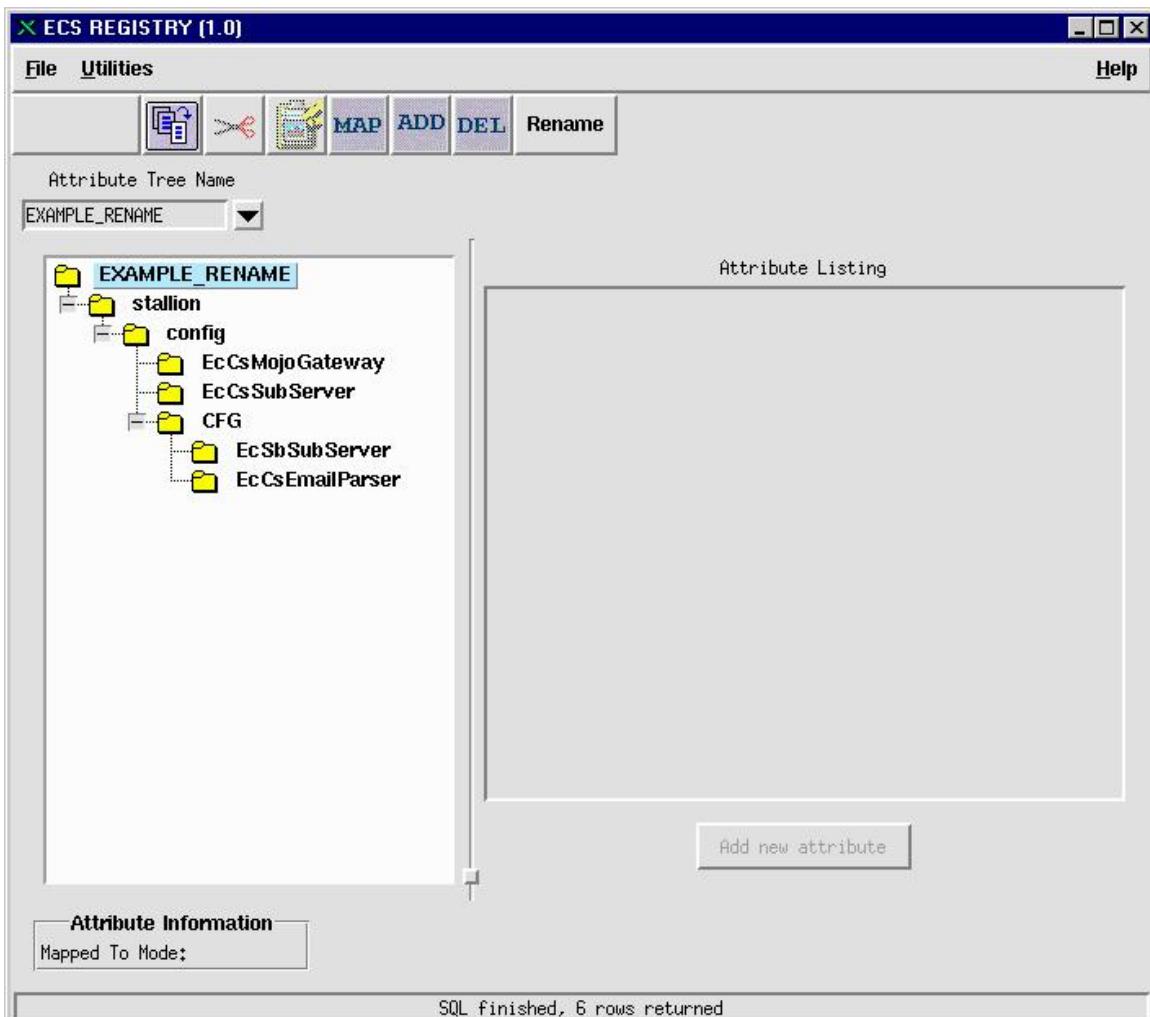
**Figure 4.1.6-20. Rename Dialog Box**

Table 4.1.6-9 describes the fields in the Rename Dialog box.

**Table 4.1.6-9. Rename Attribute Tree**

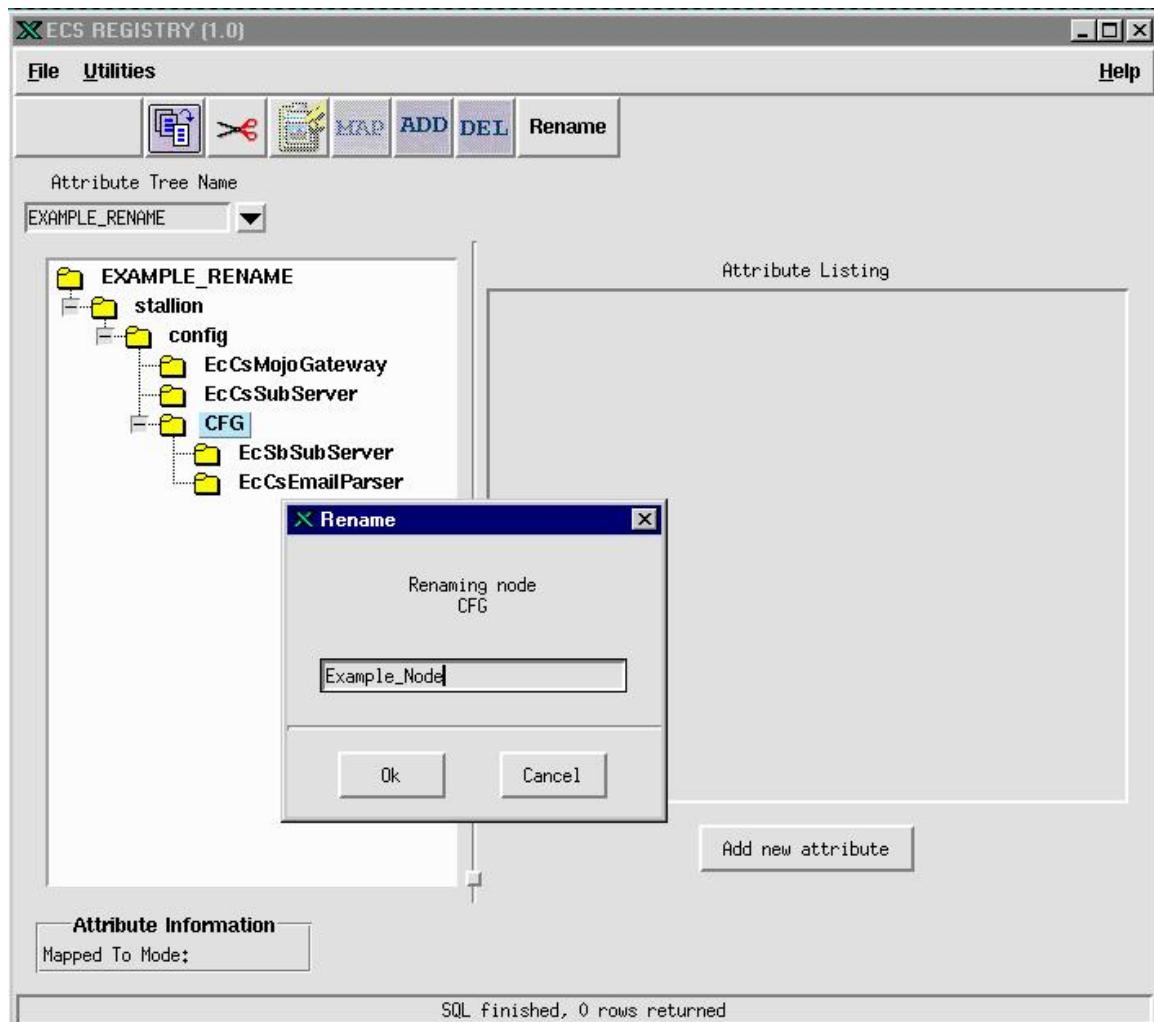
Field Name	Data Type	Size	Description
"Rename"	Display Only	-	Window title.
New Name	Text	-	New Name.
"Ok"	Button	-	Accepts the transaction.
"Cancel"	Button	-	Cancels the transaction.

Figure 4.1.6-21 represents the final results of renaming an attribute tree.



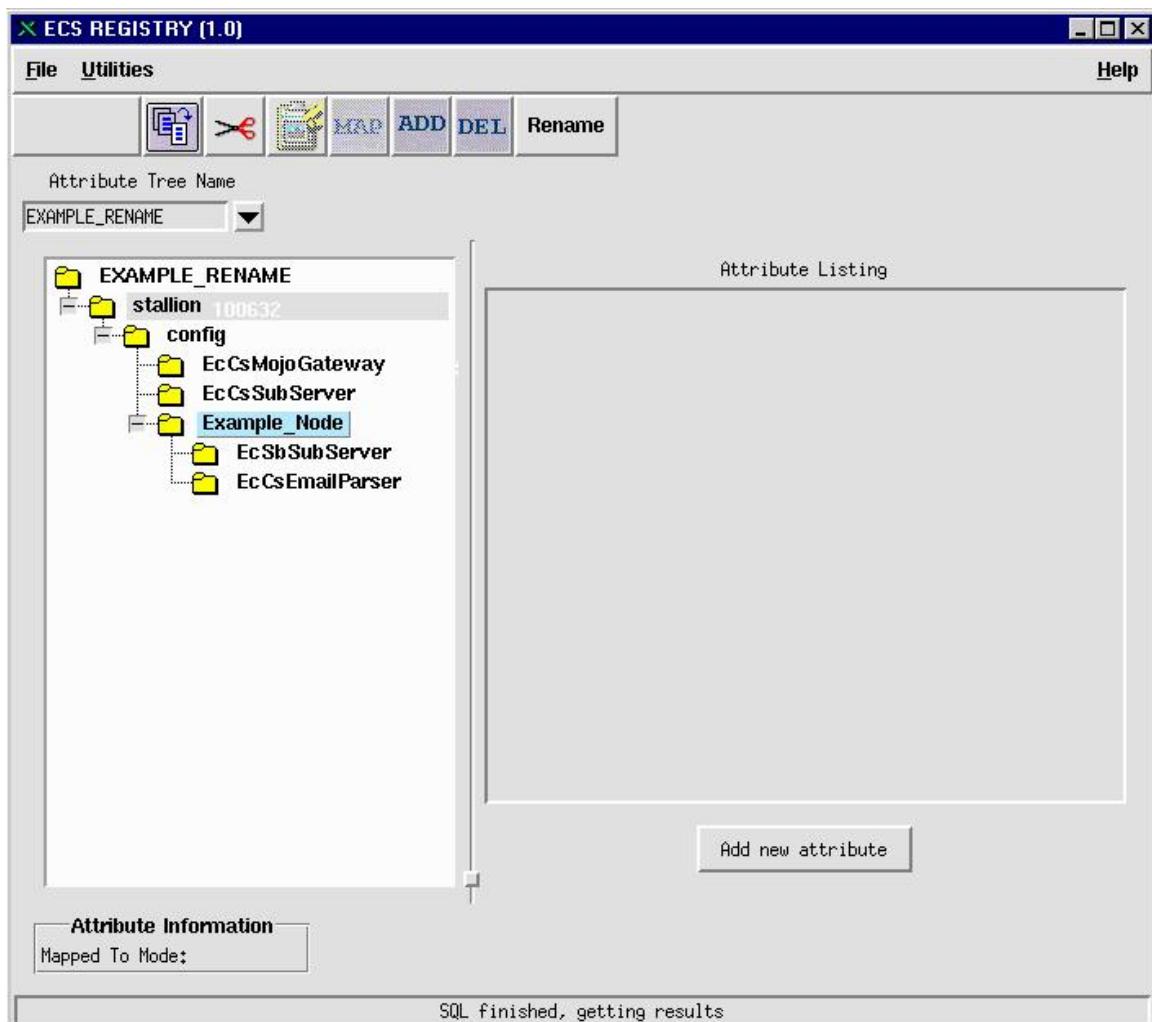
**Figure 4.1.6-21. Result of the Rename Attribute Tree Operation**

Select a node and click the Rename button from the toolbar. Enter the new name and click the Ok button as depicted in Figure 4.1.6-22.



**Figure 4.1.6-22. Rename Dialog Box for Changing the “CFG” Node**

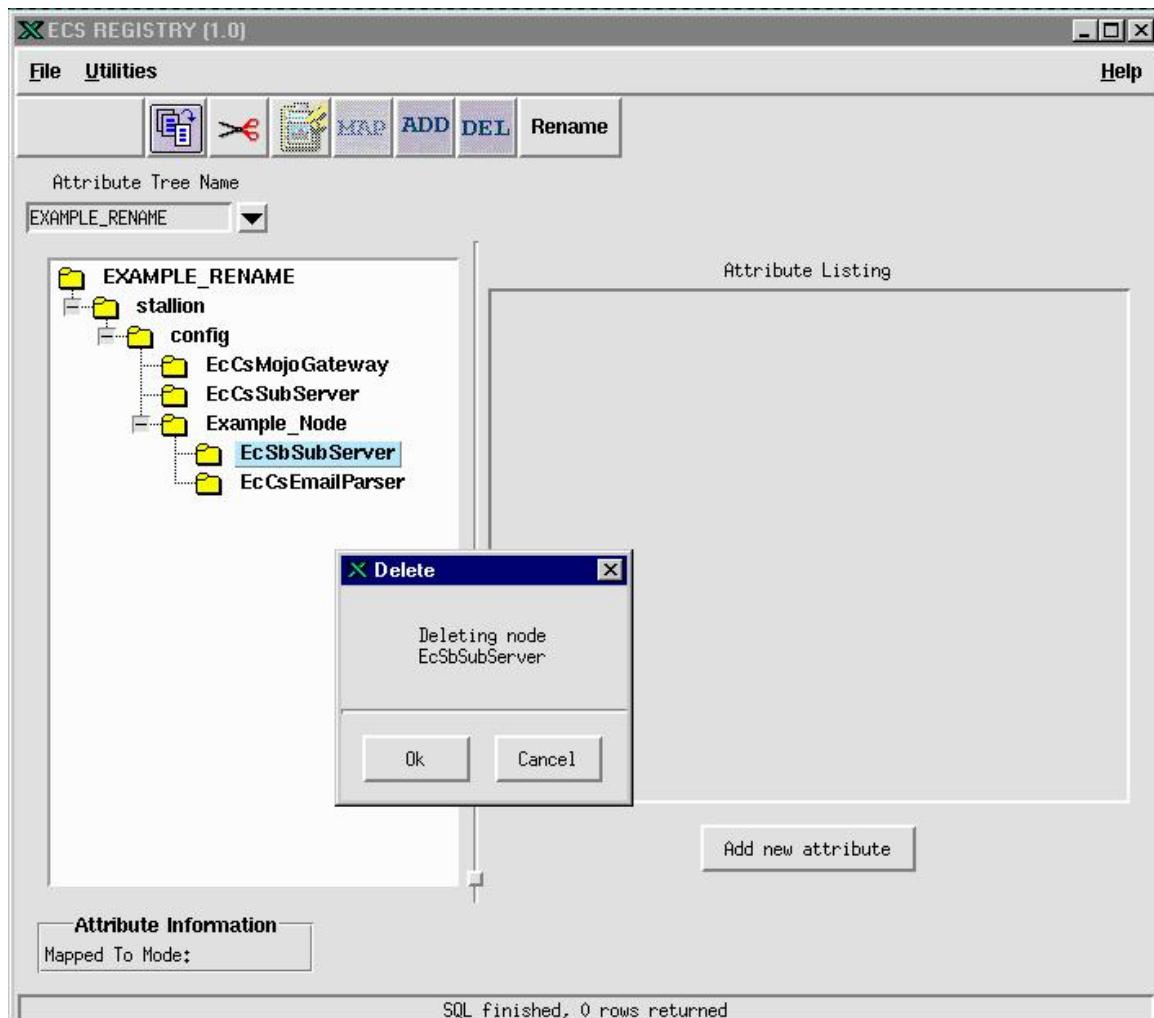
Figure 4.1.6-23 represents the final results of renaming a node.



**Figure 4.1.6-23. Results of Renaming the “CFG” Node to “Example\_Node”**

#### 4.1.6.2.6 Deleting Nodes

Figure 4.1.6-24 represents the initiation of a node deletion. Select a node and click the “DEL” button to initiate deletion of a node. A Delete confirmation dialog box is displayed. Click “Ok” to delete the selected node.



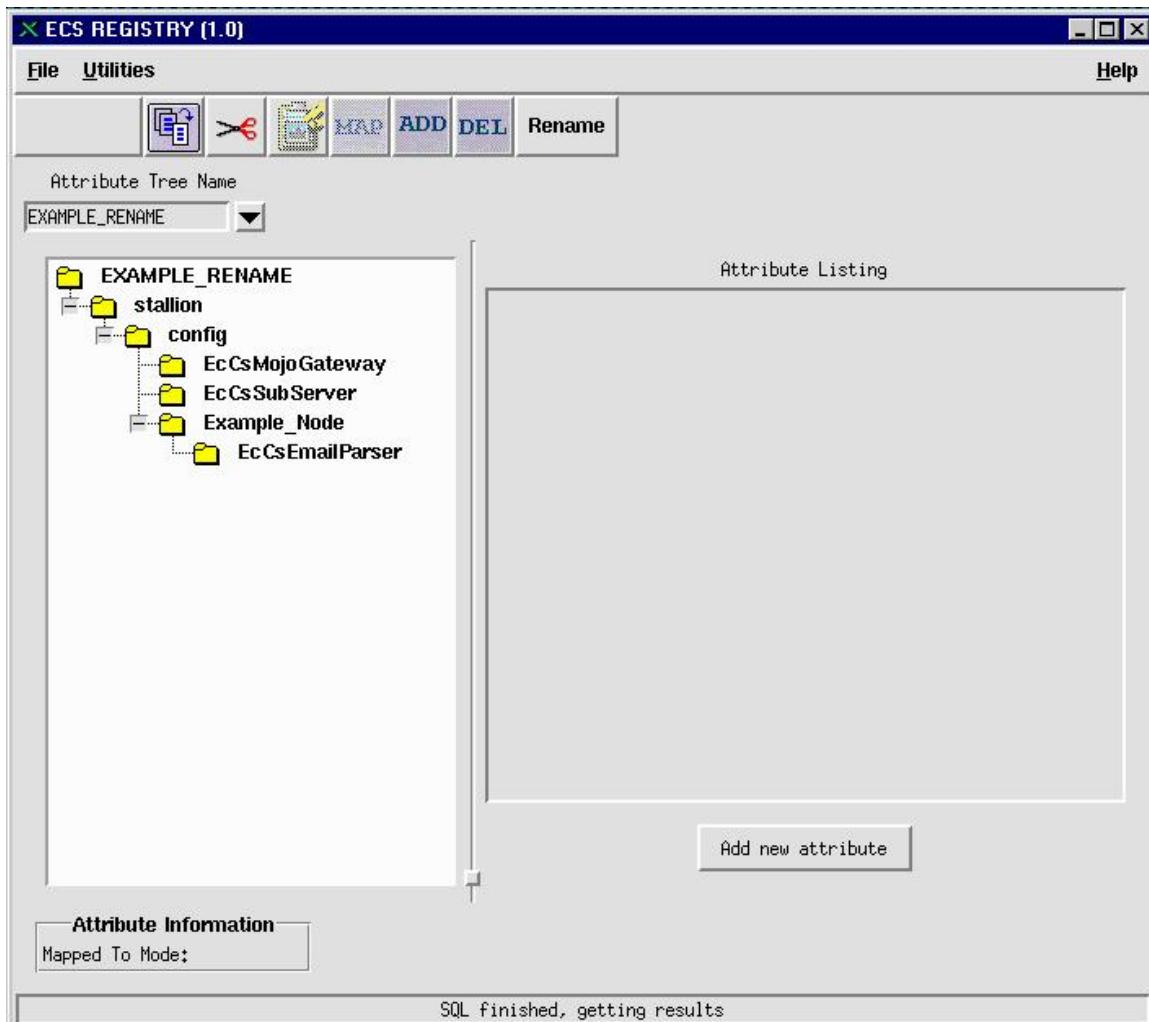
**Figure 4.1.6-24. Delete Node Confirmation Dialog Box**

Table 4.1.6-10 describes the fields in the Delete dialog box.

**Table 4.1.6-10. Delete Node**

Field Name	Data Type	Size	Description
"Delete"	Display Only	-	Window title
"Ok"	Button	-	Accepts the transaction
"Cancel"	Button	-	Cancels the transaction

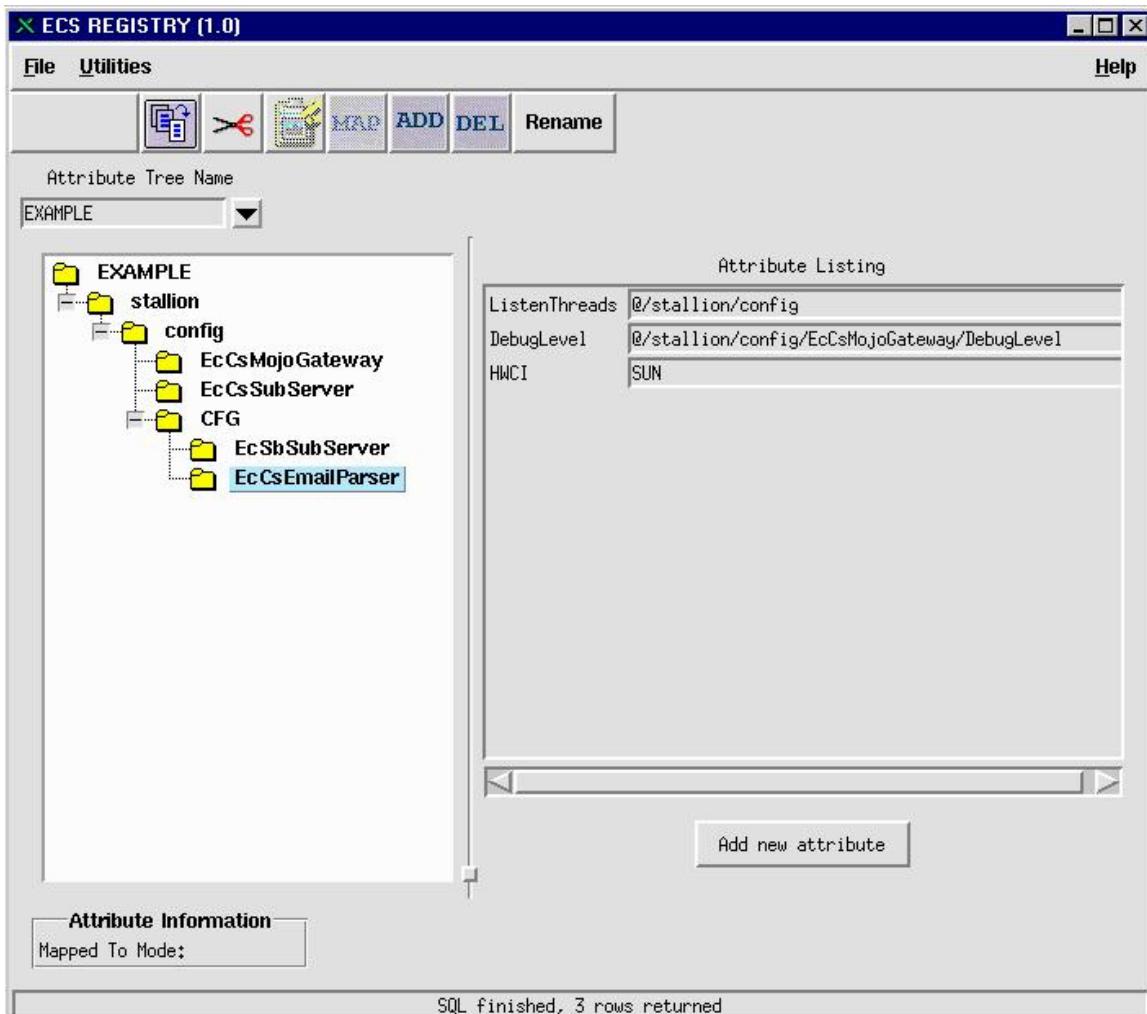
Figure 4.1.6-25 represents the final results when deleting a node.



**Figure 4.1.6-25. Result of a Confirmed Delete on the Attribute Tree**

In Figure 4.1.6-26, node “EcCsEmailParser” has been selected. Node “EcCsEmailParser” has three associated “Attributes.” These attributes contain configurable information used by the ECS application software. An attribute is a node with a type “Attribute.”

To delete an attribute, select it from the “Attribute Listing.” In the example, attribute “HWCI” is selected.



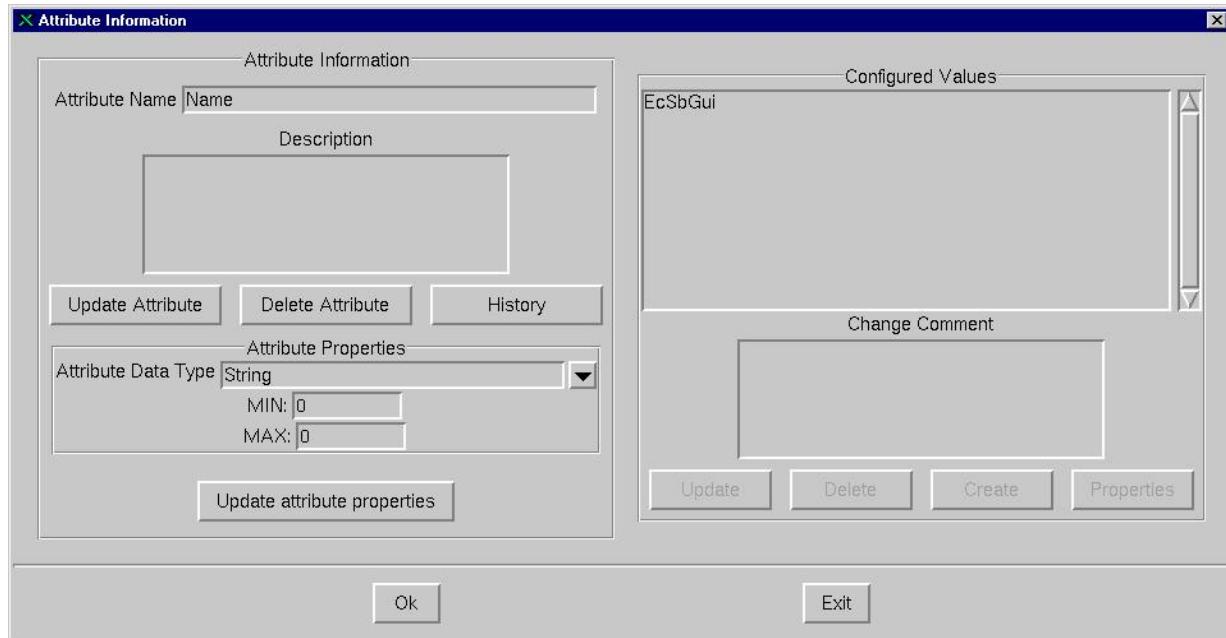
**Figure 4.1.6-26. Deleting an Attribute Operation**

Table 4.1.6-11 describes the fields for the Delete attribute operation.

**Table 4.1.6-11. Fields in the Delete Attribute Dialog**

Field Name	Data Type	Size	Description
“Attribute Listing”	Display Only	-	Window title.
Attribute Name(s) list	Display ENTRY	-	Attribute Name.
Add new attribute	Button	-	Launches the attribute information dialog.
“Ok”	Button	-	Accepts the transaction.
“Cancel”	Button	-	Cancels the transaction.

Figure 4.1.6-27 shows the Attribute Information window.



**Figure 4.1.6-27. Attribute Information Window**

Table 4.1.6-12 describes the fields in the Attribute Information window.

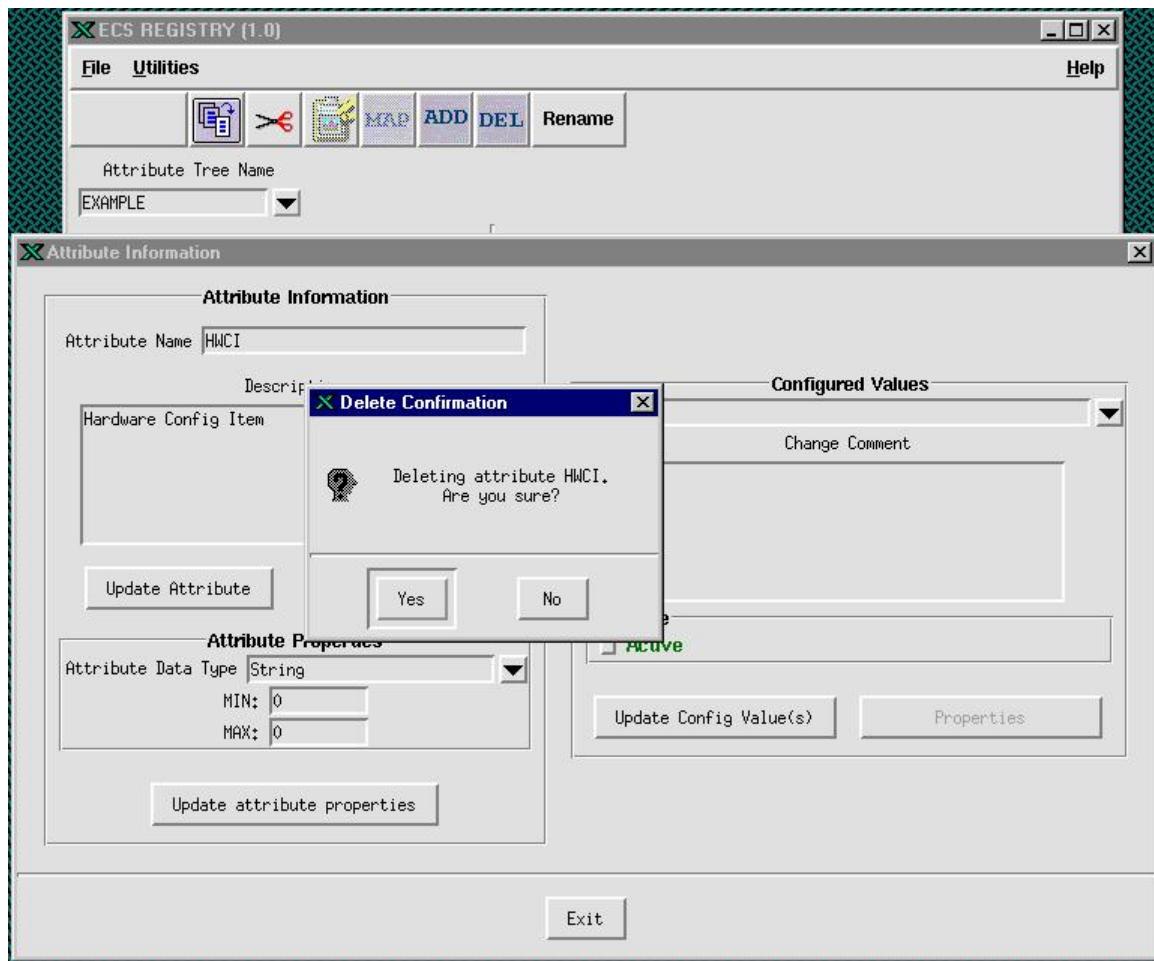
**Table 4.1.6-12. Attribute Information Window Fields (1 of 2)**

Field Name	Data Type	Size	Description
“Attribute Information”	Display Only	-	Window title.
Attribute Information	Grouping of attribute parameters	-	Heading for the characteristics of a specific attribute.
Attribute Name	Text	-	Attribute Name.
Description	Text	-	Attribute Description.
Update Attribute	Button	-	Updates the registry database with new attribute information.
Delete Attribute	Button	-	Deletes an attribute from the registry database.
History	Button	-	When this button is enabled, a list of historical data related to a selected attribute is displayed. Refer to Figure(s) 4.1.6-33 and 4.1.6-34.
Attribute Properties	Display Only	-	Heading.
Attribute Data Type	String, integer, etc	-	Displays a list of data types using a Combo Box.

**Table 4.1.6-12. Attribute Information Window Fields (2 of 2)**

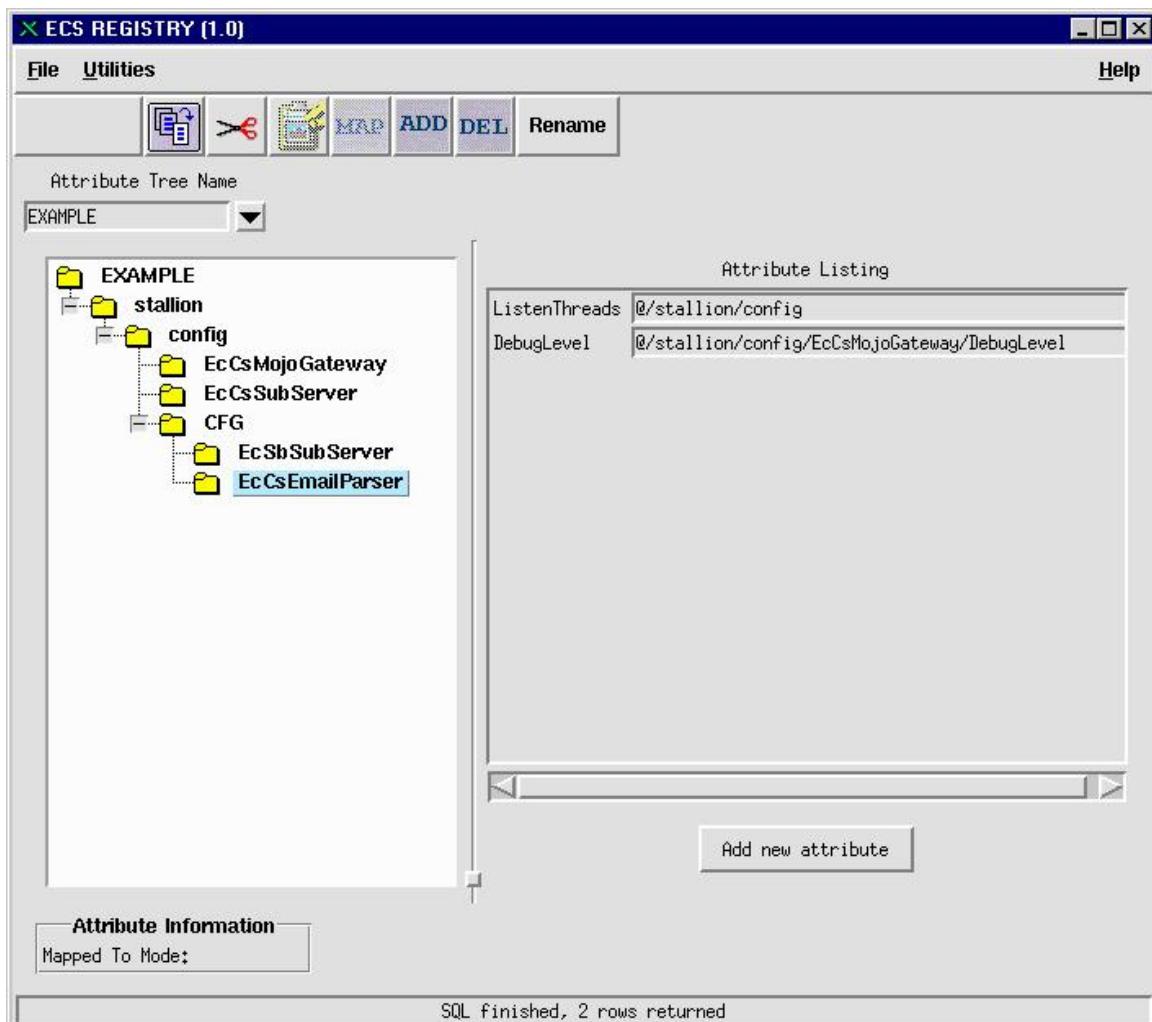
Field Name	Data Type	Size	Description
MIN	Integer/float min value	-	Used for Integer and Float data types. Sets up a minimum value.
MAX	Integer/float max value	-	Used for Integer and Float data types. Sets up a maximum value.
Update attribute properties	Button	-	Updates the registry database with new attribute property information.
Configured Values	Grouping of attribute value info.	-	Collection of configured values associated with an attribute.
Value	-	-	Displays a list of values associated with the attribute.
Change Comment	Text	-	Upon adding new values or changing the state of a value, this field should contain the supporting information.
Update	Button		Updates a selected value with a new value.
Delete	Button		Deletes a selected value from list.
Create	Button		Inserts a new value into the list.
Properties	Button		Displays property information for a selected configuration value.
Ok	Button		Saves changes to the Registry Database; removes the attribute information dialog.
Exit	Button		Aborts any changes; removes the attribute information dialog.

When the “Delete Attribute” button is clicked, a Delete Confirmation dialog showing the attribute to be deleted is displayed as shown in Figure 4.1.6-28. The user hits the “Yes” button to confirm the deletion or the “No” button to cancel the deletion.



**Figure 4.1.6-28. Delete Attribute Confirmation Dialog Box**

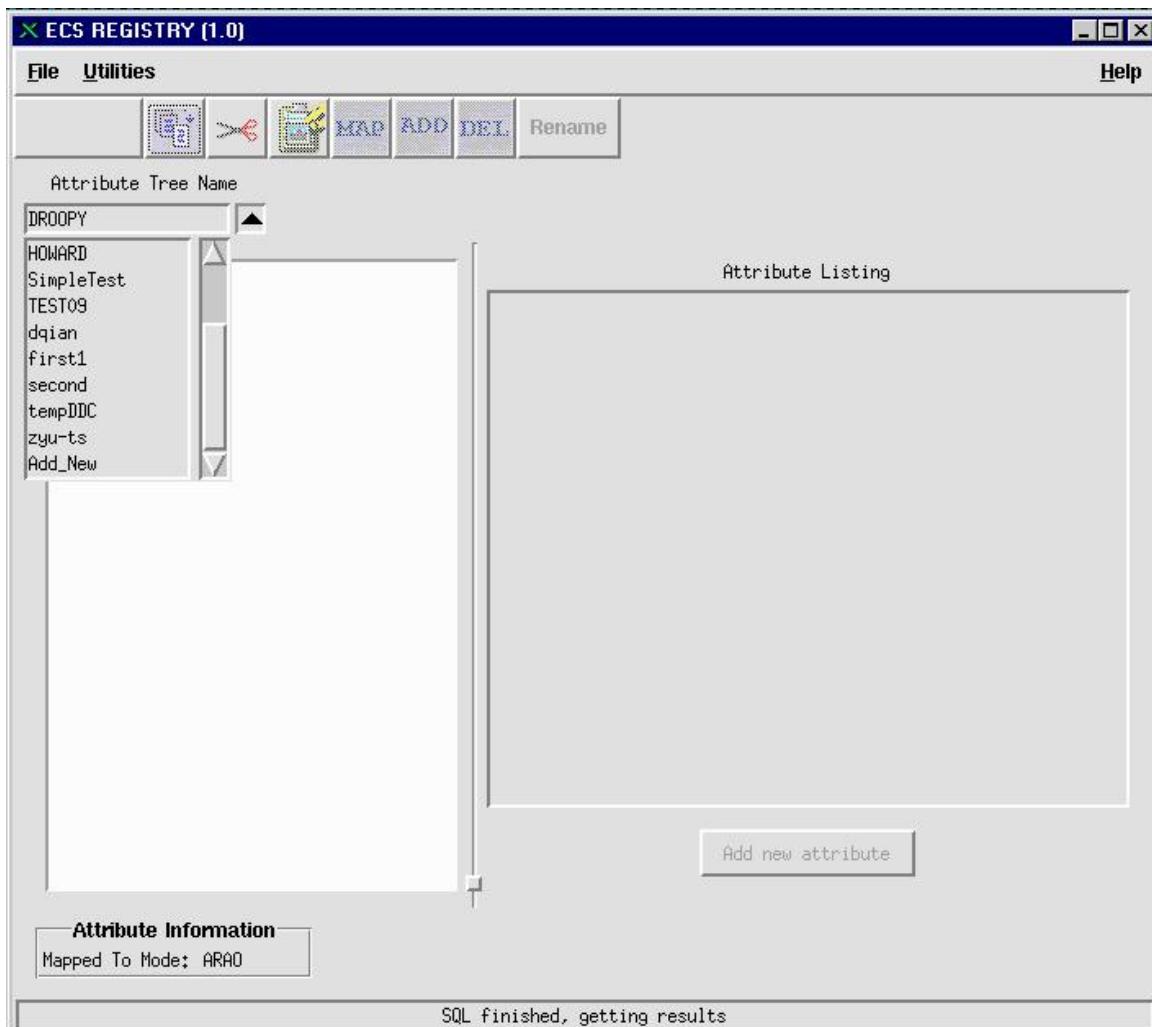
Figure 4.1.6-29 represents the final results when deleting an attribute. Attribute “HWCI” has been deleted.



**Figure 4.1.6-29. Final Result of the Delete “HWCI” Attribute Operation**

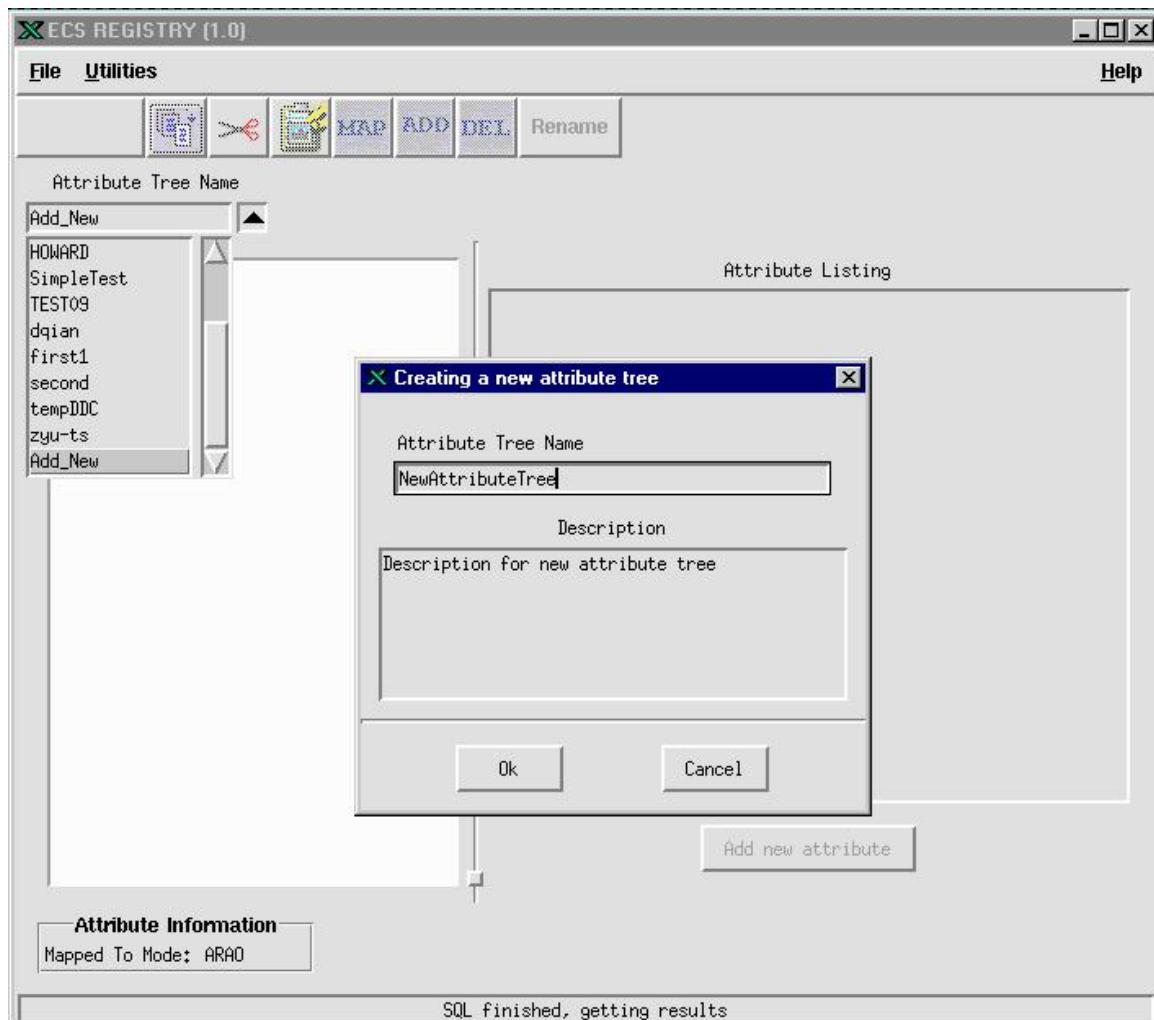
#### 4.1.6.2.7 Creating a New Attribute Tree

Open the “Attribute Tree Name” combo box and scroll down to the bottom as shown in Figure 4.1.6-30. There is an element called “Add\_New.” Clicking on this element allows the creation of a new attribute tree.



**Figure 4.1.6-30. Creating a New Attribute Tree**

Clicking on the element “Add\_New” in the list invokes the “Creating a new attribute tree” dialog as depicted in Figure 4.1.6-31. Enter the new attribute tree name, a description and click “Ok.”



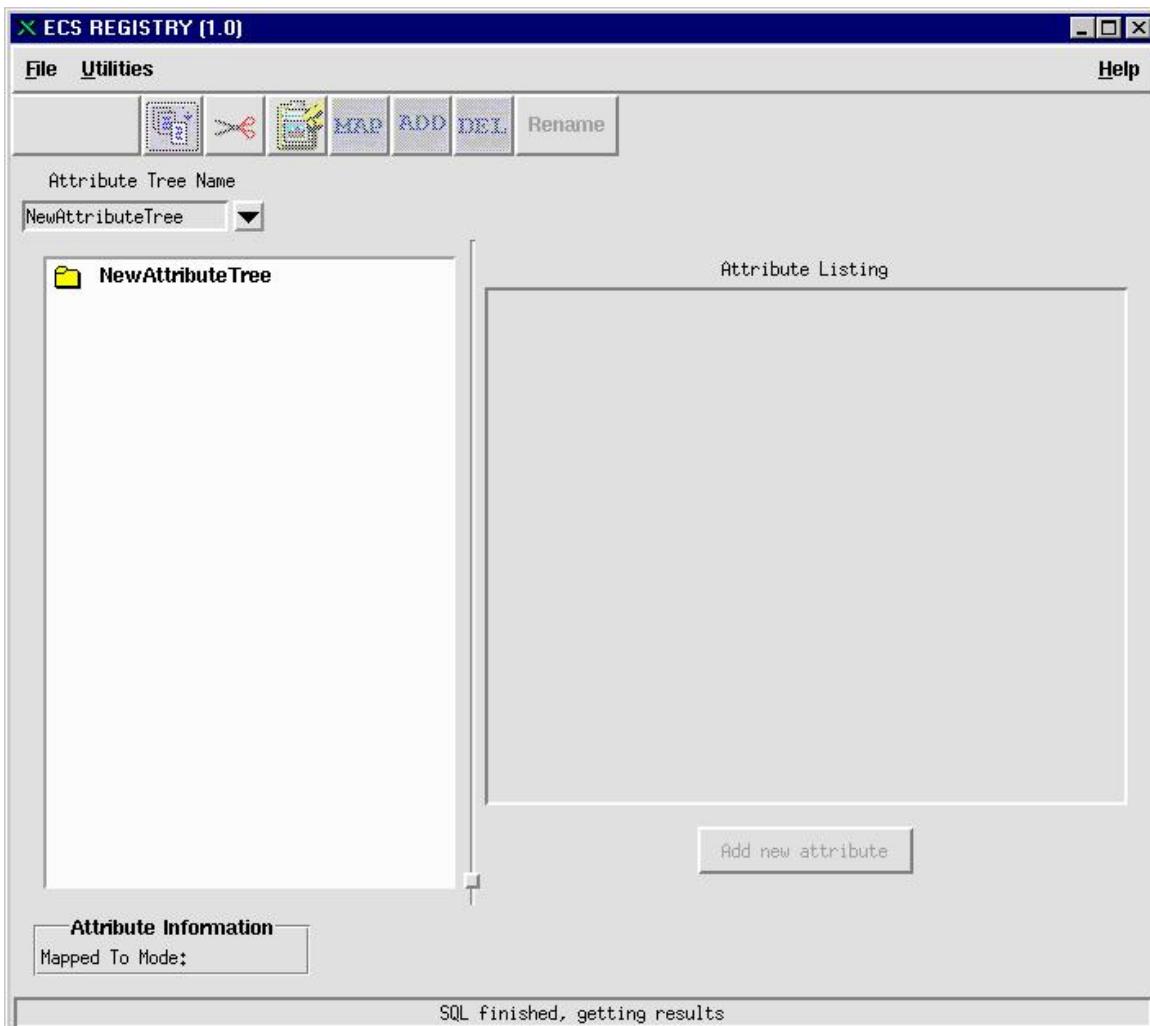
**Figure 4.1.6-31. “Creating a new attribute tree” Dialog Box**

Table 4.1.6-13 describes the fields in the “Create new attribute tree” dialog box.

**Table 4.1.6-13. Fields in the “Creating a new attribute tree” Dialog Box**

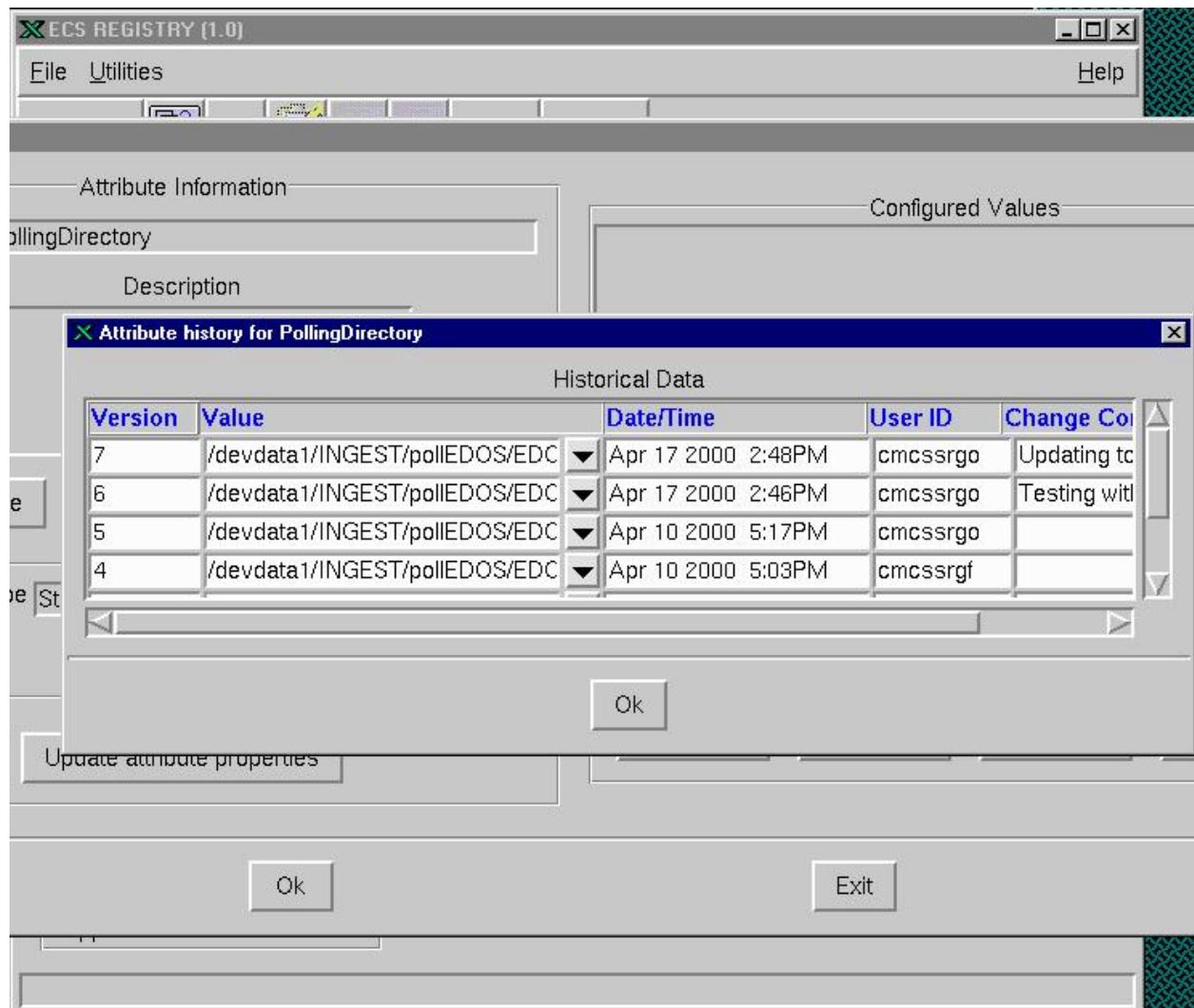
Field Name	Data Type	Size	Description
“Creating a new attribute tree”	Text	-	Dialog box title.
Attribute Name	Text	-	The user enters the name of the attribute tree.
Description	Text	-	The user enters a brief description of the attribute tree.
Ok	Button	-	Initiates the addition of the new tree.
Cancel	Button	-	Cancels the addition operation.

Figure 4.1.6-32 represents the final results when creating a new attribute tree.

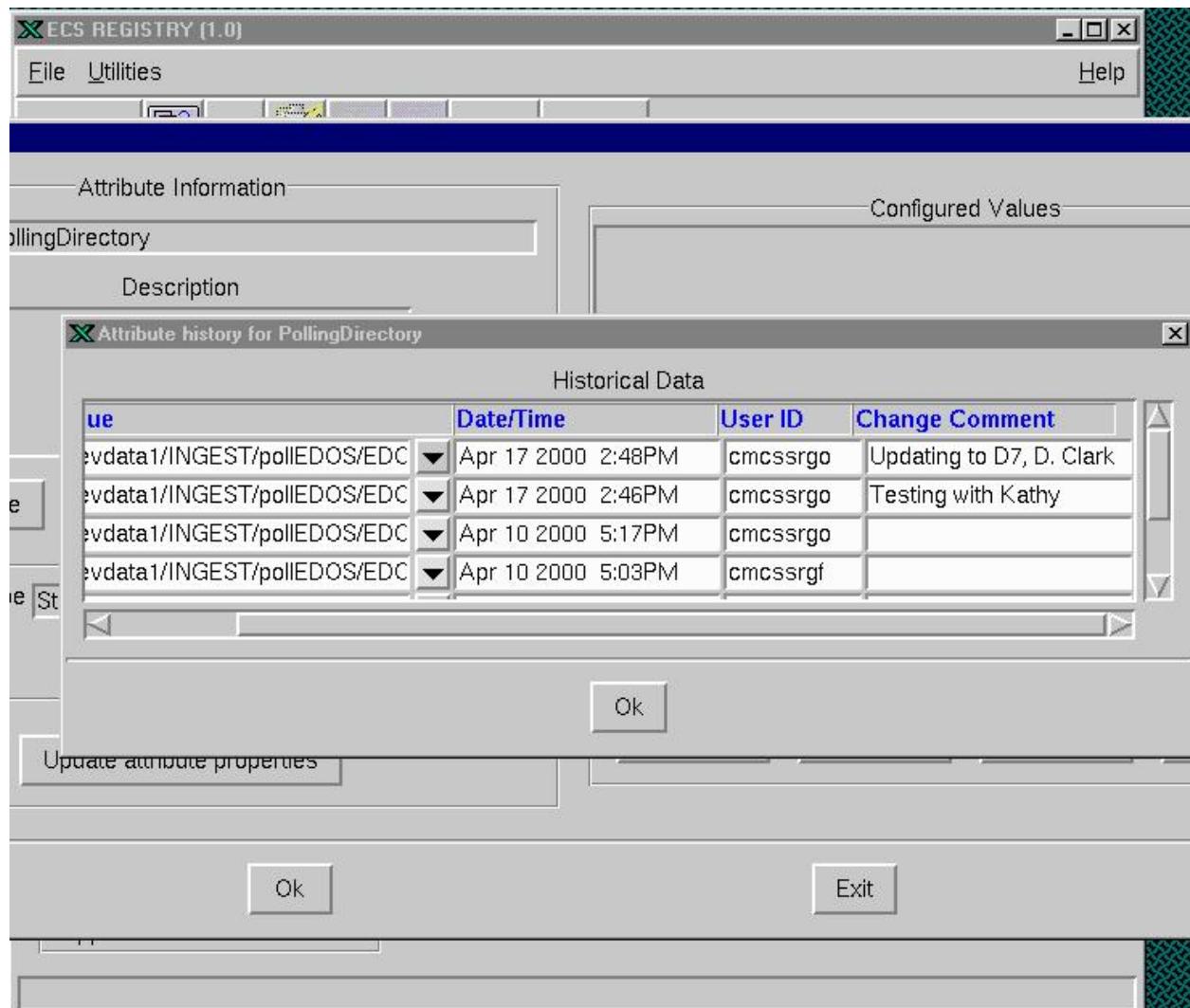


**Figure 4.1.6-32. Final Result of Adding a New Attribute Tree**

When the History button is enabled on the Attribute Information window (Figure 4.1.6-27), the operator can click on it resulting in a dialog presenting the historical data related to the selected attribute as shown in Figure 4.1.6-33/34.



**Figure 4.1.6-33. Attribute Historical Data View 1**



**Figure 4.1.6-34. Attribute Historical Data View 2**

Table 4.1.6-14 describes the Attribute Historical Data window fields.

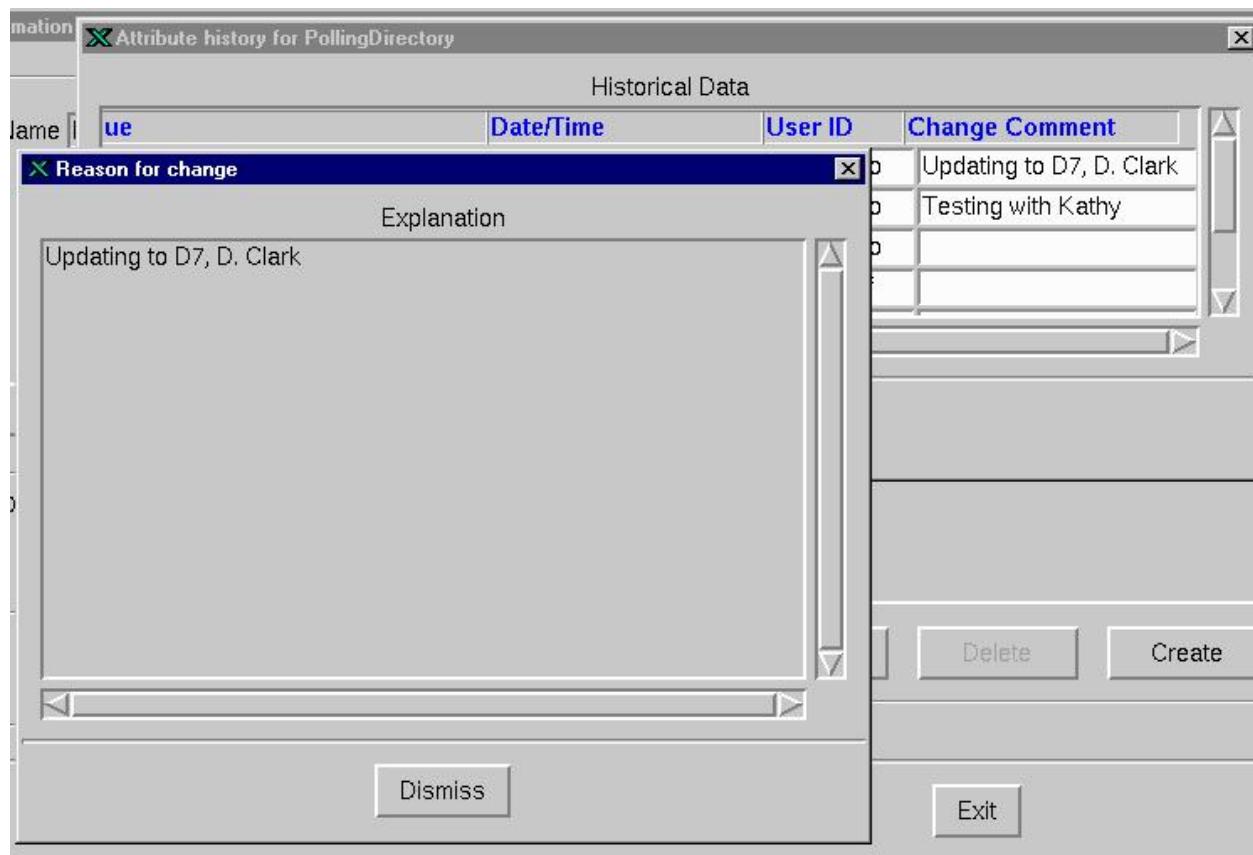
**Table 4.1.6-14. Attribute Historical Data Fields for Views 1 and 2 (1 of 2)**

Field Name	Data Type	Size	Description
"Attribute history for " <b>Attribute Name</b> ""	Display Only	-	Window title
Historical Data	Display Only	-	Heading
Version	Display Only	-	Heading
Value	Display Only	-	Heading
Date/Time	Display Only	-	Heading

**Table 4.1.6-14. Attribute Historical Data Fields for Views 1 and 2 (2 of 2)**

Field Name	Data Type	Size	Description
User ID	Display Only	-	Heading
Comment	Display Only	-	Heading
Version	Read only entry field	-	Displays version number (Descending order)
Value	Read only entry field	-	List of Previous values before the change. Click arrow to review list.
Date/Time	Read only entry field	-	Displays Date and Time of change
User ID	Read only entry field	-	User ID responsible for the change
Comment	Read only entry field	-	Reason for the change. For a complete view click the "Comment" entry box. See Figure 4.1.6-35. "Reason for change dialog"

Figure 4.1.6-35 shows the Reason for Change dialog box.



**Figure 4.1.6-35. Reason for Change Dialog**

Table 4.1.6-15 describes fields in the Reason for change dialog.

**Table 4.1.6-15. Reason for Change**

Field Name	Data Type	Size	Description
“Reason For Change”	Display Only	-	Window title
“Explanation”	Display Only	-	Heading
Text	Read only text box	-	Complete view of comment.
Dismiss	Button	-	Closes reason for change dialog

#### **4.1.6.3 Required Operating Environment**

The required operating environment is Linux 2.x.

##### **4.1.6.3.1 Interfaces and Data Types**

Not Applicable

#### **4.1.6.4 Database Schema**

The name of the Registry database used is not fixed. DAAC management determines the name of the Registry database.

#### **4.1.6.5 Special Constraints**

The ECS Registry GUI allows only one user to write to the database at a time.

#### **4.1.6.6 Outputs**

None

#### **4.1.6.7 Event and Error Messages**

Error dialogs are displayed when mandatory fields are missing.

#### **4.1.6.8 Reports**

No reports are generated.

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#### **4.1.7 Whazzup GUI**

Deleted. Not applicable to Release 7.22.

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## **4.2 System Monitoring**

This section describes the system monitoring tools used by DAAC operators:

1. Big Brother Monitoring Software

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#### **4.2.1 Big Brother - Better Than Free Edition**

Big Brother - Better Than Free Edition (BTF) is a network monitoring and notification COTS application. DAAC network administrators use it to monitor network devices and the services on those devices and to get feedback on their network's performance. Big Brother BTF provides the following capabilities:

- Display - Big Brother displays status information as web pages or WML pages for WAP-enabled devices. These web pages have the systems monitored along the left hand side of the page, the tests for each system across the top of the page. This results in a matrix of color coded dots on screen. Green is normal, red indicates an alarm condition. In addition, the background color of the status pages is always the color of the most serious condition of any element being monitored at that time.
- Architecture - Big Brother uses a client-server architecture combined with methods which both push and pull data. Network testing is done by polling all monitored services from a single machine, and reporting these results to a central location (the BBDISPLAY). If you want local system information, you can install a BB client on the local machine, which will send CPU, process, disk space, and logfile status reports in periodically. Each report is time stamped with an expiration date (like milk). This lets us know when a report is no longer valid, which is usually an indication of a more serious problem.
- Protocol - Big Brother sends all status reports from client to server over port 1984. What other port would Big Brother use? The IANA has assigned Big Brother this port, and the BB protocol itself is open. Limited support for SNMP trap handling is supported using third-party plugins.
- Platforms- The Big Brother servers and BBNET functions run on Unix/Linux, with a scaled-down version for NT/Win2K is also available. Client software is available for Unix/Linux, NT/Win2K/Win2003 while user contributed clients for Netware, Mac OS 9, VMS, AS/400 and VM/ESA at <http://www.deadcat.net>.
- Network tests - Big Brother includes support for testing ftp, http, https, smtp, pop3, dns, telnet, imap, nntp, and ssh servers. Support for additional tests is easily added.
- Local Tests - If you choose to install a BB client on a local machine, it will monitor disk space, CPU usage, messages, and can check that important processes are up and running.
- Notification - Big Brother has a sophisticated notification. You can notify based on time-of-day, machine, or the test that failed. In addition there is support for an initial delay before paging (useful to cut down on late night false alarms), page-only-every defined amount of time, paging groups, acknowledgement, and escalation. Built in support for e-mail paging, alphanumeric paging via Qpage or Sendpage, or numeric and SMS pages.
- History & Reporting - Big Brother supports reporting, which will allow you to determine whether Service Level Agreements are being met. In addition, Big Brother provides

access to historical status information so you can see what the problem was at any given time.

- Plug-ins & Extensions - Big Brother supports plug-ins that can be written in any language. In addition, there is a worldwide support community that has contributed hundreds of plug-ins to monitor everything from Oracle Databases to CPU temperature on Solaris machines (<http://www.deadcat.net>).
- Flexibility - Big Brother is very flexible. Warning and alarm levels are all easily redefinable. The Web Display can be easily customized. We have hooks into other products, like MRTG for bandwidth monitoring. Since you have the source code, you can easily figure out what Big Brother is doing, and change it to suit your needs.
- Community
- One of the best things about Big Brother is the community that has sprung up around it. Over 2000 Brothers on the various mailing list provide quick and friendly support and commentary.

The EMD Big Brother BTF Release Notes (914-TDA-337) provides one way of configuring Big Brother. Details of the configuration described in the release notes and other ways are provided in the documentation shipped in the Release Notes and media of Big Brother. The common Big Brother functions used by the DAAC network administrators are listed in Table 4.2.1-1.

**Table 4.2.1-1. Common ECS Operator Functions Performed with Big Brother**

Operating Function	GUI	Description	When and why to Use
View network devices/services status	View icon color and on web GUI; view quick status dialog box.	Icon color indicate the status of network devices and services.	To verify that all network devices and services on the devices are operational. To ascertain network devices and services that are not operating properly.
View network devices/services performance data	Logs and Report menus on GUI	A set of reports that can be viewed, printed, and/or its content transmitted to a file.	To obtain status information about monitored devices and services.

#### **4.2.1.1 Quick Start using Big Brother**

Big Brother is a Web-based COTS application used to monitor network devices and services on the EMD Production LANs. Big Brother capabilities are executed through the use of Big Brother GUIs.

#### 4.2.1.1.1 Invoking Big Brother

To view the Big Brother display GUI, the operator connects to the Big Brother server's URL in an HTML browser such as Firefox, Internet Explorer, or Netscape. The URL will be the hostname of the management server of the local site. For instance, at LPDAAC, the URL would be <http://e4ms110.edcb.ecs.nasa.gov/bb>.

#### 4.2.1.2 Big Brother Main Screen

The main screen shown in Figure 4.2.1-1 shows an example of the main Big Brother page. The main page is a matrix of host and monitored services. There is a toolbar at the top and bottom of the screen.

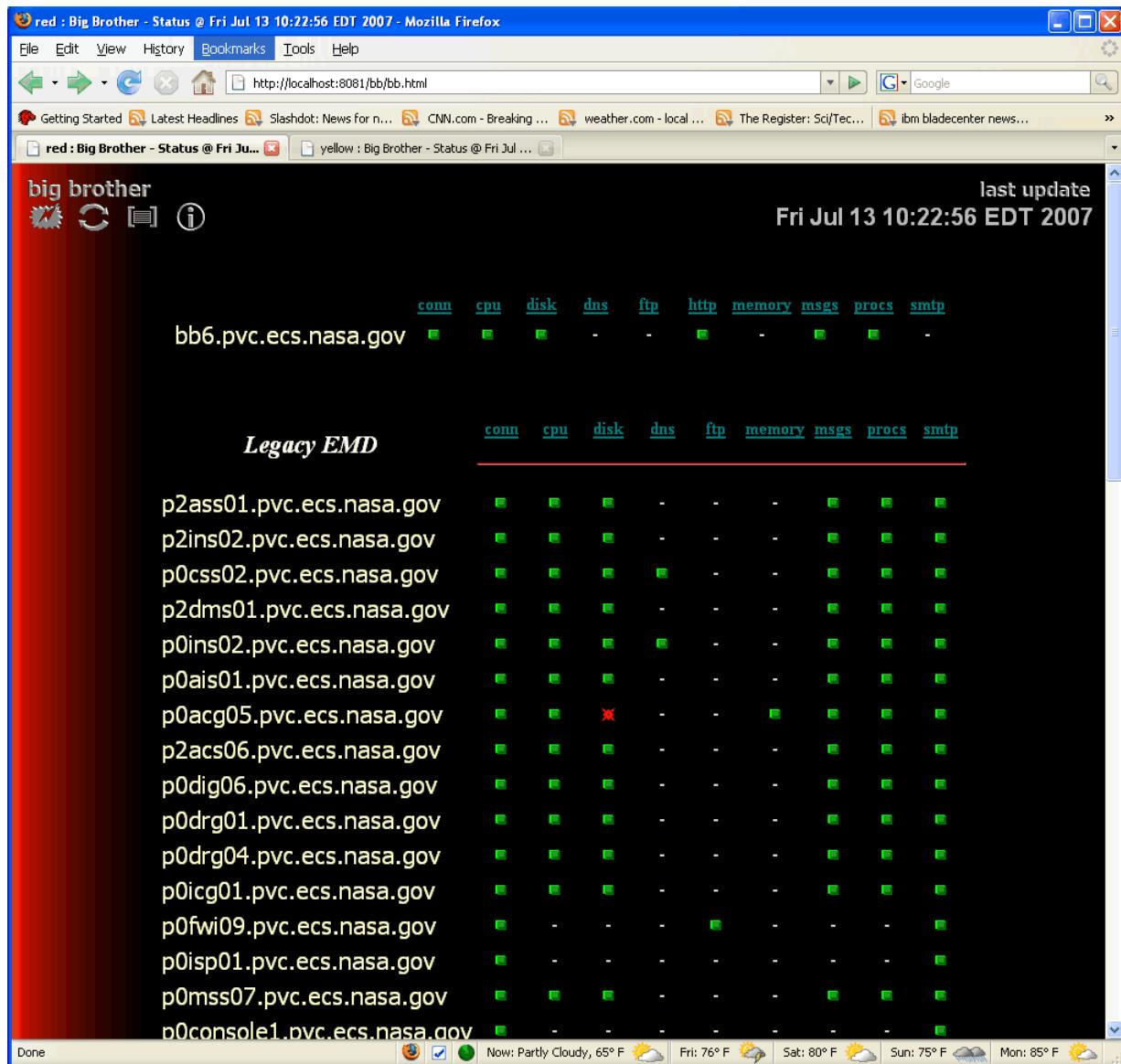


Figure 4.2.1-1. Big Brother Main Page

#### 4.2.1.2.1 Menu Toolbar

The Big Brother Server Display web page has a “Toolbar” at the upper left portion of the main page and sub-pages. This toolbar (Figure 4.2.1-2) has four icons which are explained below in detail.



**Figure 4.2.1-2. Big Brother Toolbar**



Notification/Page Acknowledgement – Clicking on this icon navigates to a page where administrators enter acknowledgment of events to pause notification alerts.



Condensed View – Clicking on this icon toggles the main page view from “full” list of hosts and services to a “condensed” view of hosts and services. The condensed view displays only hosts and services that are displaying warnings or error conditions.



Availability Report – Clicking on this icon provides access to the availability reports, where an operator or administrator can investigate availability for a customized time-frame.



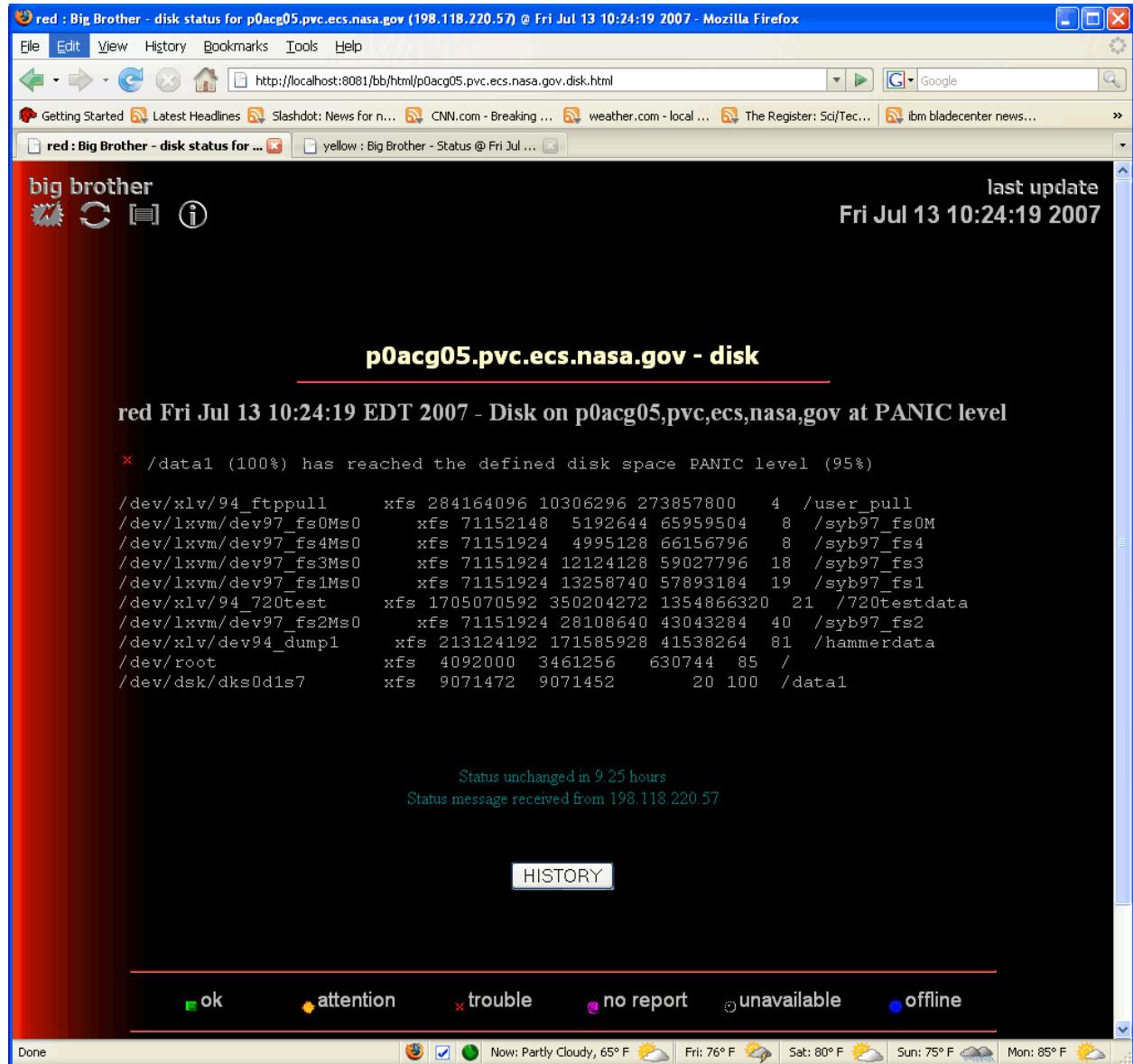
Help – Clicking on this icon will display a menu of help topics.

#### 4.2.1.2.2 Indications of a Device or Service Problem

Big Brother automatically provides notification of device and service problems on devices. A device’s service icons remain green if the device and its services are responding to the Big Brother polls and the service is not impaired. If a device is down, or its service impaired beyond preset thresholds, the color of this device’s service changes from green or yellow to red animated starburst shape as shown earlier in Figure 4.2.1-1. Table 4.2.1-2 explains the color codes An operator can further drill down to find details of the condition that caused the impairment or outage, specifically in the case of a service impairment where a level such as CPU, or disk space crossed a predefined threshold. Figure 4.2.1-3 shows the Error Detail Page.

**Table 4.2.1-2. Color Codes by Order of Severity**

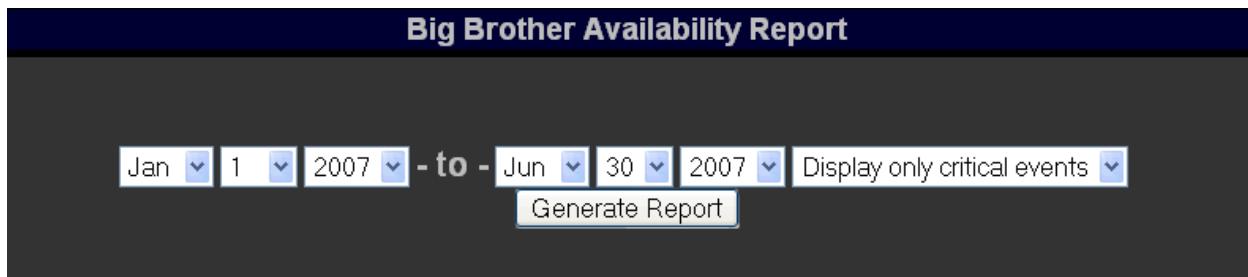
Code	Description
■	Red – Critical Problem
●	Purple - No report - No report from this client in the last 30 minutes. The client may have died.
○	Yellow - Attention - The reporting system has crossed a threshold you should know about.
■	Green - OK – Status of host or service is normal.
○	Clear - Unavailable -The associated test has been turned off, or does not apply. A common example is connectivity on disconnected dialup lines.
●	Blue - Disabled - Notification for this test has been disabled. Used when performing maintenance.
✓✓✓	Acked - A current event has been acknowledged by one or many recipients. The acknowledgement is valid until the longest delay has expired



**Figure 4.2.1-3. Big Brother Error Detail Page**

### 4.2.1.2.3 Big Brother Reports

Big Brother logs changes in the network devices' status and its monitored services. From the logged data, Big Brother can create availability reports as shown in Figures 4.2.1-4 and 4.2.1-5



**Figure 4.2.1-4. Big Brother Availability Report Definition**

The screenshot shows a web browser window titled 'Big Brother Report: Availability Report - Mozilla Firefox'. The main content area displays an 'availability report' for the period from Jan 1 2007 to Jun 30 2007. The report includes a table for 'big brother' and another for 'Legacy EMD' hosts.

Host	conn	cpu	disk	dns	ftp	http	memory	msgs	procs	smtp
bb6.pvc.ecs.nasa.gov	99.99	-	-	-	-	-	-	99.85	-	-

Host	conn	cpu	disk	dns	ftp	http	memory	msgs	procs	smtp
p2ass01.pvc.ecs.nasa.gov	99.81	-	-	-	-	-	-	98.17	-	-
p2ins02.pvc.ecs.nasa.gov	99.82	-	99.94	-	-	-	-	90.96	99.69	98.21
p0css02.pvc.ecs.nasa.gov	99.97	98.87	-	99.99	-	-	-	99.24	-	-
p2dms01.pvc.ecs.nasa.gov	99.95	-	-	-	-	-	-	95.06	-	-
p0ins02.pvc.ecs.nasa.gov	-	99.99	-	-	-	-	-	99.98	-	99.95
p0ais01.pvc.ecs.nasa.gov	99.94	-	-	-	-	-	-	-	-	-
p0acg05.pvc.ecs.nasa.gov	99.93	-	98.58	-	-	-	-	92.66	99.11	-
p2acs06.pvc.ecs.nasa.gov	99.94	-	99.29	-	-	-	-	99.92	-	-
p0dig06.pvc.ecs.nasa.gov	99.61	-	99.91	-	-	-	-	94.52	99.19	-
p0drg01.pvc.ecs.nasa.gov	99.99	99.78	99.93	-	-	-	-	94.21	99.01	-
p0drg04.pvc.ecs.nasa.gov	96.16	99.15	99.68	-	-	-	-	97.71	98.26	-
p0icg01.pvc.ecs.nasa.gov	99.99	-	-	-	-	-	-	99.86	-	-
p0fwi09.pvc.ecs.nasa.gov	99.94	-	-	-	98.66	-	-	-	-	99.21
p0isp01.pvc.ecs.nasa.gov	99.98	-	-	-	-	-	-	-	-	-
p0mss07.pvc.ecs.nasa.gov	99.92	-	-	-	-	-	-	99.89	-	-
p0console1.pvc.ecs.nasa.gov	99.98	-	-	-	-	-	-	-	-	-

**Figure 4.2.1-5. Big Brother Availability Report**

The Reports menu in the top toolbar provides access to the different types of reports and the variations of the reports. Refer to the Reports chapter of the Big Brother User's Guide for explanations of these reports and the instructions for creating and adding new reports to the Big Brother reports menus.

#### **4.2.1.3 Required Operating Environment**

The required operating environment is provided in the Big Brother BTF Release Notes posted on the EMD Baseline Information System's web pages at your local site.

##### **4.2.1.3.1 Interface and Data Type**

For host ping (is the host active on the network or not), Big Brother uses ICMP (Internet Control Message Protocol) ping. For other service status collection from Big Brother client agents, service availability data is sent to the server via port 1984. In addition, Big Brother server can be configured to retrieve information from each client's SNMP agent via standard SNMP protocol ports: 161/udp for general purpose (request/response) communications, and 162/udp for trap.

##### **4.2.1.3.2 Databases**

Big Brother captures its event data in log files. These files are read only type files.

##### **4.2.1.3.3 Special Constraints**

None

##### **4.2.1.3.4 Outputs**

Outputs from Big Brother come in the form of Availability Report, Group Reports, and Device Reports. These items can be displayed on the monitor and/or sent to the printer.

##### **4.2.1.3.5 Event and Error Messages**

Big Brother logs network and service event information in event logs. It changes the appearance of devices' icons on the main page to alert the operators and administrators something is not working properly. Big Brother sends out other types of notifications to designated persons if it is configured to do so. Refer to the Reports chapter of the Big Brother User's Guide for detailed information about Big Brother event and message activities.

##### **4.2.1.3.6 Reports**

Big Brother produces three types of reports: System Reports, Group Reports, and Device Reports.